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NEWSPAPER



CW Photos by M. Upton

Where are they now? With the exception of one of the four men shown above in pictures taken shortly before U.S. vs. IBM went to trial a year ago, they're all still in court. Nicholas Katzenbach, IBM general counsel, and Thomas Barr, IBM lead attorney (both left) are still squaring off against Raymond Carlson, lead Justice attorney (far right). Joseph Widmar (far right) is back in Washington.

U.S. vs. IBM: One Year Gone

NEW YORK — The trial of the U.S. government's antitrust suit against IBM celebrated its first anniversary here last week.

Unfortunately, court was not in session to permit Justice Department attorneys, IBM counsel and the judge hearing the case to acknowledge the event last week.

But the following numbers may serve to commemorate what began on May 19, 1975 and to give some indication of how much has been accomplished in this first year in court.

When the trial recessed on Thursday, May 13, 133 days spread over 35 weeks had been spent in court. A total of 29 witnesses had taken the stand on behalf of the government, and one has yet to complete his testimony.

The record of the proceedings for the past year now numbers 19,179 pages.

As of May 13, the government had entered 565 exhibits into evidence and IBM had put 523 exhibits before Judge David N. Edelstein.

When the government finishes presenting its case to the court — perhaps three years from now, some observers believe — IBM will begin its defense. The corporation has 402 people, including some 134 DP users, on its witness list; indications are, however, that it will call only 200 of these.

Although the U.S. vs. IBM suit is seven and a half years old, its first year in court suggested the case may still be in its infancy.

Sabotage, Fire Among Threats

Federal Systems Unduly Vulnerable: GAO

By E. Drake Lundell Jr.

Of the CW Staff

WASHINGTON, D.C. — "Many federal data processing assets and much valuable data are not protected properly" from threats of sabotage, theft, fire and flood,

Federal DP Crimes Reach \$2 Million

By E. Drake Lundell Jr.

Of the CW Staff

WASHINGTON, D.C. — Computer-related crimes in the Federal government have caused monetary losses of over \$2 million and violated the privacy of individuals about whom computer records are kept, according to a General Accounting Office (GAO) report.

That's apparently not the whole picture. The GAO admitted this represents just the tip of the iceberg since "agencies do not customarily differentiate between computer-related and other crimes" and "there may be a large number of crimes which have not yet been detected or reported."

The majority of the 69 crimes uncovered by the GAO in the wide-ranging (Continued on Page 4)

according to a recent General Accounting Office (GAO) report.

The report showed the 9,000 computers in the Federal government are "not only... frequently allowed to function without proper controls, but... they are dangerously vulnerable to terrorist activity," according to Sen. Abraham Ribicoff (D-Conn.), who requested the study.

The Senate Government Operations Committee headed by Ribicoff will investigate the matter, the senator said, and staff sources indicated hearings might be held next month.

"Catastrophic losses to government-sponsored data processing installations, such as the loss of human life, irreplaceable data and equipment, have occurred," the GAO study reported.

No Contingency Plans

At the same time, however, an investigation into 28 separate installations found "less than half... had developed and put into operation contingency plans to provide for continuity of operation if a loss occurred."

"The impact from losses at data processing installations which did not have contingency plans could interfere seriously with efficient and economical operations of government, have an immeasurable im-

pact on individuals and organizations relying on government data and result in costly reconstruction efforts," the GAO report warned.

The GAO report estimated the govern- (Continued on Page 4)

High Fraud Potential Uncovered In Audit of SSI DP Operations

By Edith Holmes

Of the CW Staff

WASHINGTON, D.C. — In the absence of adequate controls, employee fraud could further undermine the already inefficient operation of the Social Security Administration's (SSA) newest federal welfare program, investigators probing the problems of Supplemental Security Income (SSI) found here recently.

Their audit, released this month by the Department of Health, Education and Welfare's (HEW) audit agency, stated that in one of SSA's busiest areas — Region IX, which covers California, Nevada and Hawaii — "internal controls at the district offices were not adequate to prevent processing fictitious or unauthorized SSI

payments."

Meanwhile, the SSA finished compiling figures for SSI's first 27 months of operation and reported the program's clients have been overpaid by \$622 million.

Implemented by SSA in 1974, SSI was created by Congress in 1972 to federalize state and county care for blind, disabled and aged adults. The program was added to the agency's regular workload of Social Security and veterans' benefits payments.

The HEW audit of the California region showed SSA employees in the area's district offices could be tempted to be dishonest because they have "unlimited access to computer terminals."

It would not be difficult for employees (Continued on Page 6)

AT&T Trying Hard to Sell Bill That Would Overturn FCC Competition Rulings

By Ronald A. Frank

Of the CW Staff

WASHINGTON, D.C. — AT&T has launched a concerted lobbying effort to sell the merits of the Consumer Communications Reform Act to its stockholders and members of Congress.

The campaign began shortly after the first sponsor of the proposed legislation presented it in the House of Representatives on March 10 [CW, March 22].

Seven days later, AT&T chairman John deButts sent a letter to Bell stockholders urging them to make their views known to their elected representatives in Congress.

The letter said: "We do not ask that you agree with us on the issues." This statement followed a presentation on why competition and interconnection, fostered by the Federal Communications Commission (FCC) are bad for the country in general and the AT&T stockholder in particular.

The deButts letter was followed by an offer to shareholders of "further information and background material on the need for the legislation" that could be obtained free of charge by writing to a special address at AT&T headquarters at 195 Broadway, New York, N.Y.

Asked how much this effort has cost AT&T, a spokesman said "so far we have spent about \$50,000 mainly for brochures and handout materials."

In addition, AT&T has "realigned the duties of some people who have generally been dealing with these issues in regulatory and congressional hearings. On the legislative effort itself, we probably have less than 10 people spending most of their time on the subject," the spokesman said.

DeButts' plea to the stockholders at the annual meeting and the threats about the

This is the first in a series of articles describing the efforts being expended behind the scenes to inform Washington legislators and others about the pros and cons of the Consumer Communications Reform Act of 1976, now pending in both houses of Congress.

declining value of their investments did not fall on deaf ears. Within days the mail to congressional legislators from constituents back home picked up significantly. Many of the letters urged support for the Consumer Communications Reform Act, as deButts had suggested.

Following common practice in such cases, the letters were forwarded to the Common Carrier Bureau of the FCC with notes from the congressmen and senators asking that the bureau staff answer the questions raised.

"This is a counterproductive effort because these letters contain little new information," one bureau staff member said. Many of the letters made the same general points in support of AT&T policies and in disagreement with FCC decisions, particularly those creating the specialized common carriers and allowing the interconnection of customer-provided equipment.

One week ago the volume of mail reaching the commission was about 15 letters per day and one source said it was his opinion the peak was yet to come.

The Common Carrier Bureau is not (Continued on Page 6)



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User Charged Discrimination

HIS, Service Bureau Settle Out of Court

By Molly Upton

Of the CW Staff

NEW YORK — An out-of-court settlement was recently reached by Integrated Computer Services, Inc. (ICS), a service bureau, and Honeywell Information Services, Inc. (HIS) after ICS' counterclaim was amended.

The terms of the settlement were not disclosed, and neither Honeywell nor ICS would comment on the settlement.

ICS' counterclaim raised the issue of a vendor's right to discriminate among users of its equipment.

The amended counterclaim asked \$5.1 million in compensatory damages and not less than \$5 million in punitive damages.

The filing sought to permanently enjoin HIS from failing to provide the same maintenance and availability of spare parts to users who lease or purchase HIS gear from sources other than HIS as it does to those who procure their equip-

ment from HIS.

ICS originally filed suit against HIS because, it claimed, an HIS-recommended upgrade to two H3200s which failed to perform as specified resulted in lost business and increased expenses totaling \$2 million [CW, Feb. 16].

HIS then filed an action for \$1.2 million plus interest which it said ICS owed for payment of promissory notes.

'Bait-and-Switch' Tactics

ICS' amended counterclaim described the "bait-and-switch" and "lock-in" tactics it claimed were employed by HIS in selling the service bureau the dual H3200s.

Breaking down the compensatory damage claims, ICS sought \$2 million for costs incurred in acquiring and preparing for the new system and for loss of its existing system, which it traded in to HIS.

TRW Signs to Support, Maintain Singer Hardware and Software

By Nancy French

Of the CW Staff

CLEVELAND — TRW, Inc. and The Singer Co. have signed a "definitive" agreement turning over maintenance and customer support functions for the Singer Business Machines (SBM) Division to TRW.

The arrangement includes a pledge by TRW to continue production of the Singer System Ten at Singer's Cogar plant in Utica, N.Y., as well as to provide software maintenance and in some cases enhancements for systems now in use.

Since there is some overlap in TRW and Singer's peripheral products, some questions still have to be answered as to which peripherals will be available. Further, TRW has not yet said how long the System Ten will be manufactured, what arrangement will be made for field support or whether a point-of-sale pollable terminal will continue to be available for retail users, according to Don Sandford, Forum Executive director.

Forum is the Singer users group.

So far Forum members are generally pleased with answers received from TRW and Singer and are convinced the firms are giving users information as quickly as they can, Forum President Carlton Mathews said.

Overseas, users will be supported by

International Computers Ltd. (ICL) according to another "definitive" agreement signed recently.

On or about Oct. 1, TRW is expected to decide what Singer assets the firm will need to continue supporting Singer users, and these assets will be bought from Singer, a TRW spokesman said.

According to a memorandum Forum received from TRW and Singer, DMF.2 Release 1 will be available about June 1 depending on the results of field tests which, to date, "have been good," the firm said.

This release will support magnetic tape Liocs and includes resolution of more than 40 software error notices generated from Release H, the memo said.

DMF 2.0 multivolume pool software will be available for release with the Model 21 processor in August pending results of field test, according to the joint memo.

Further, a home office systems and support organization has been set up in Wayne, N.J., for development and support of SBM software. Software teams have been established to support SPA and CAS Type 1 operation system software and retail software.

The SPA 2.0 general accounting release will be available within two weeks.

These costs and the agreement to purchase the system were the result of benchmarks which ICS said HIS misrepresented and performed in a "wanton and reckless fashion."

Lost Profits Claimed

ICS also sought \$1.2 million in compensation for lost profits and lost customers. It charged these losses occurred as a result of HIS' failure to supply trained and qualified personnel to design and write JCL program instructions, as HIS had orally agreed to do.

Charging HIS with fraud, the service bureau wanted \$750,000 for lost processing time, lost customers, additional overhead and costs incurred because of HIS' alleged promises the H3200s would double throughput and no programming changes would be necessary.

These promises, ICS said, were not included in the written contract.

ICS asked another \$750,000 on grounds the equipment it finally agreed to take was different both from that upon which the proposed representations were made and the gear that ran the benchmarks.

HIS told ICS the equipment contained the same characteristics as originally represented, the service bureau's filing said.

ICS was "locked in" to the new system by virtue of the noncancelable contract and the trade in of existing equipment, the counterclaim said.

The service bureau sought \$225,000 in compensation for costs incurred when it reverted to its original Mod I operating system and also for the expense involved by HIS' alleged attempts to prolong ICS' efforts to use the H3200s.

ICS also requested \$185,000 for costs it had incurred and expected to incur in obtaining maintenance and spare parts for its third-party system.

HIS indicated it would offer maintenance only if ICS paid \$130,000 it said ICS owed, ICS said. ICS stated it did not owe this amount.

Third-Party Charges

The counterclaim further alleged HIS has restricted the resale of HIS gear to third parties by discriminatory maintenance and spare parts policies to users of third-party gear.

Through its refusal to make spare parts available, HIS precluded competing companies from offering preventive and remedial maintenance for such equipment, ICS charged.

Prior to the settlement, Raytheon provided service to ICS' computers, an ICS spokesman said.

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GAO Finds 14 of 18 Federal DP Sites Exposed to Fire

WASHINGTON, D.C. — In its evaluation of the security measures used by government installations (see story on Page 1), the General Accounting Office (GAO) visited 18 DP centers in the U.S. and 10 overseas.

Fire hazards were the main source of security breaches, the GAO study found.

Threatening conditions included combustible paper supplies and/or magnetic tape files stored in computer rooms at 14 installations.

Portable extinguishers were the only available fire protection in three DP centers, the GAO said, and at one installation not even these were available.

Twelve installations neglected to periodically clean below the raised flooring on which computers were placed, another fire hazard. At six locations, computers were in operation in rooms where master electrical power shutdown controls were not easily accessible at exit points, the GAO reported.

Flood hazards constituted another area of concern. The GAO found computers at 10 installations operating in areas where overhead water or steam pipes (excluding sprinkler systems) existed with inadequate provision for drainage.

In two centers, computers were in basements, exposing them to potential flooding conditions.

The potential for sabotage was another weak point at many of the installations visited. Vendor service personnel were not supervised while on the premises of seven DP centers, the investigation discovered.

Five installations did not control in-house service personnel while they were in the computer areas, and three locations were deemed possible targets for vandals by the GAO investigators.

Susceptibility to theft or misuse endangered security at five locations where remotely accessed computer systems were in operation without software to detect improper or erroneous attempts to access the computers or data files involved.

Fourteen of the 18 sites lacked formal contingency plans to ensure continuity of operations in an emergency, the study found.

Agency Says Federal Systems Unduly Vulnerable

(Continued from Page 1)

ment currently spends over \$10 billion annually for DP activities, but warned the consequences of potential losses resulting from lax security measures could be far greater than that figure.

"Of more importance than the concern over the monetary value of these assets is the centralization and concentration of data in computerized environments, which increases the potential for major losses or misuses," the report noted.

For example, Ribicoff said, "It is impossible to estimate the effects on millions of our elderly citizens whose livelihood depends on Social Security should the computer be destroyed."

But "the potential threat is not limited to Social Security," he added. "In terms

of federal revenues, for instance, imagine the havoc that would result from the destruction of computers processing federal taxes.

'General Lack of Concern'

Of the 28 installations studied by the GAO, at least 14 were found susceptible to fire hazards; 10 were poorly located in case of floods; at least seven were susceptible to sabotage; five were susceptible to theft or misuse; and 14 lacked contingency plans to deal with any of the possible problems.

In general GAO attributed "the poor security measures to a general lack of concern for a comprehensive plan to provide effective security at a reasonable cost."

It noted the National Bureau of Standards (NBS) developed guidelines for physical security and risk management in 1974, but pointed out "no policy statement has been issued... regarding the application and use of the guidelines" by the Office of Management and Budget, which has responsibility for the area.

"We believe that the NBS guidelines as modified by our suggestions will provide the necessary means to structure a sound program and could go a long way in improving the conditions we found," GAO said.

"However, use of the NBS guidelines is not mandatory and they apply only to new installations or those which are improving their computer systems," it added.

DP Crimes Uncovered by GAO Only Tip of the Iceberg

(Continued from Page 1)

report did not involve sophisticated attempts to use computer technology for fraudulent purposes, but rather were uncomplicated acts such as altering input.

The GAO report did not point out, however, that most sources indicate the more sophisticated types of computer manipulations are usually harder to detect and therefore may remain hidden for longer periods of time.

Most Involved Input

Out of the 69 cases uncovered by the GAO, 62% involved persons perpetrating fraudulent input. Supply systems are "particularly vulnerable to fraudulent input," the GAO noted.

In one case, "a perpetrator used a computer terminal to ascertain the location and availability of items desired by outside conspirators," GAO said.

"Once he located those items, the perpetrator caused the system to prepare fraudulent requisitioning documents. Then he used the documents to obtain the items he wanted, took the items from the installation and sold them to the outside parties," the agency explained.

"Although the total amount of property stolen through computerized supply systems cannot easily be determined, the value of one such theft in our case files was about \$53,000. Another loss of over \$300,000 was averted" when discovered "accidentally," the GAO said.

In other incidents, the individuals involved prepared fraudulent input that

caused systems to make direct payments to individuals or businesses as payroll, social welfare or compensation transactions, the GAO said.

In one case, a government employee helped automate an accounting system and, during the process, introduced fraudulent payment vouchers into the system.

"The computer could not recognize that the transactions were fraudulent and issued checks payable to fictitious companies set up by the employee and his accomplices," the GAO said, noting payments of over \$100,000 were made in this particular case.

Another such fraud was discovered after an anonymous phone tip, but only after the perpetrator had gotten away with \$90,000 to \$250,000 by entering fictitious claims in a social welfare system.

Money Not Only Victim

But, the GAO was quick to point out, "computer-related crime does not always lead to direct monetary losses."

"The manager of a non-federal computer center processing personal information [for the government] was able to steal some of this data and sell it to outside parties who were not authorized to use it."

"Although the government did not lose any money, the privacy of individuals whose data records were involved was violated," the report noted.

In all, fraudulent direct payments accounted for 27 of the crimes studied by the GAO; 28 cases involved fraudulent

inventory/supply actions; eight cases involved the unauthorized altering of personnel records; facilities were used for personal benefit (such as a theft of time on a computer system) in four cases; and sabotage of operations accounted for two of the cases.

In every case reviewed, the incidents were directly traceable to weaknesses in system controls," the GAO said, adding "these weaknesses were the result of deficient systems designs, improper implementation of controls by operating personnel or a combination of both."

In all of the cases, the managers involved had placed primary emphasis on "making their systems operational; control was not emphasized."

To overcome the problem, the GAO suggested "management should give attention to controlling systems as well as to implementing them. Managers should continuously assess operations to insure a proper balance between performance of systems and control over assets."

Other Measures Suggested

Other measures the report called for to control computer-related crime in government included:

- "An organizational plan that segregates the duties of individuals to minimize their opportunity for misuses or misappropriation of the entity's resources."

- "A system of authorization and record procedures adequate to provide effective accounting control over assets, liabilities, revenues and expenses."

ties, revenues and expenses.

- "An established system of practices to be followed for each duty and function of the organizational departments."

- "An effective system of internal review. This includes an internal audit staff that has training adequate to review and evaluate computer-based system controls and that does such reviews both when systems are being designed and after they have become operational."

- "Analyses of crimes to pinpoint the internal control weaknesses that may have facilitated them."

DP Students Recover Fees After N.Y. Action

NEW YORK — Students at a computer training school which closed in January 1975 and left them in various stages of study will share \$20,000 recovered under a performance bond in an action brought by the New York State Department of Law.

The proceeds of the bond will be distributed to 28 men and women whose claims range from \$125 to \$2,475, according to a spokesman for State Attorney General Louis J. Lefkowitz.

The bond was issued by the American Insurance Co. as surety for International Computer Institute, Inc. of New York City, which closed on Jan. 6, 1975 after a federal tax lien was filed against it, the spokesman explained.

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WANG

Given Good Chance of Passage

Senate Gets Bill Creating Data Bank of Federal Grants

By Nancy French

Of the CW Staff

WASHINGTON, D.C. — A bill that would create a data bank of all federal domestic grants was voted out of the Senate Government Operations Committee and is expected to reach the floor this week.

Proposed jointly by Senators Edward M. Kennedy (D-Mass.) and William V. Roth Jr. (R-Del.), the bill calls for a computerized system that would maintain data on all existing federal grants as well as assist in determining whether a local community is eligible for any particular one of them.

Companion legislation has been introduced by Rep. Charles Rose (D-N.C.) in the House of Representatives, where it is being considered by Rep. Jack Brooks' Government Operations Committee.

The bills' passage was given a good chance of success by Washington observers.

The Senate bill provides for a system that is virtually an extension of one which the Department of Agriculture has used successfully to assist small communities interested in that department's rural development grants.

However, the majority of federal grants are described in thick catalogs that take hours and days to wade through, according to Kennedy.

And even when local officials have chosen the grants for which they would like to apply, they don't actually know whether their communities would be eligible for the funds, he added.

The Senate Government Operations Committee heard testimony recently describing how fast and economical the system proposed by Kennedy could be.

Paul Kugler, director of the Plans and Program Staff in the Department of Agriculture's Rural Development Service, where a small-scale grants data base is already in operation, told the committee a computer search of the programs available could be run in about 10 minutes at a cost of \$6.

A manual hunt for the same information could take as long as 40 hours and cost about \$250, he said.

Agriculture set up its rural assistance data base because "we felt the need to develop such a system to fulfill our mandate, 'which is to help rural communities,'" Kugler said.

"As a consequence, we worked with the Agricultural Stabilization and Conservation Service to develop computer software for the data base and developed a model in about three months," he added.

Could Work With Agriculture

The system was completed within a year, according to Kugler, at a cost of the salaries of two and a half people and \$20,000 in computer time.

Kugler believes the Agriculture Depart-

ment's system could be expanded to fulfill all the requirements of the Kennedy-Roth bill at a cost of \$300,000, including the time of twelve staff members.

"We already have about 600 programs in our system, and about 400 more would have to be added. Incrementally, it wouldn't be much of a job cause we've already done the hard part," he said.

Maintaining the system would cost about \$300,000 a year, he estimated, because there are more than 1,000 different assistance programs and the conditions on some of the programs change from week to week.

Kugler said he thinks even the smallest communities are now ready for a data base because of the proliferation of terminals in recent years.

The system operated by the Rural De-

velopment Service is available to users via the Service Bureau Co. and General Electric Timesharing networks under a licensing agreement. If the Kennedy-Roth bill is passed, the grants data base would be accessible the same way, Kugler indicated.

However, if an official in a local community wants to access the Rural Development Service data base only once, "we can run it for him here free," he said, and have hard-copy results in his hands within 10 days.

Requests for this free one-time service should include the name of the community, the county name and a clear statement of the problem. They should be addressed to the Administrator, Rural Development Service, Department of Agriculture, Washington, D.C. 20250.

Grosch Wins Term As ACM President

NEW YORK — With a plurality of the 9,000 votes cast after a hotly contested election, Dr. H.R.J. Grosch has won a two-year term as president of the Association for Computing Machinery (ACM).

Other candidates for the top post were Peter J. Denning and Carl Hammer.

Although only 30% of the association's 30,000 members cast ballots in this election, that was about 2,000 more votes and a "much better percentage" of the membership than has voted in the past, an observer noted.

Daniel D. McCracken had an easier time winning the association's vice-presidency. He had a clear majority of the votes cast for that position. G.G. Dodd won a close race to become ACM's new secretary.

The new slate takes office July 1, according to an ACM spokesman.

In other contests, association members chose Susan H. Nycum, Anita Cochran, Raymond E. Miller and Robert L. Ashenhurst to be council members at large.

At the same time, regional council seats went to Howard L. Morgan (Allegheny), Marshal Yovitz (East Central), Thomas D'Auria (Greater New York), William W. Cotterman (South East) and Evelyn A. Swan (Southern California).



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Justice Refutes Charge by IBM That Use of FBI Unconstitutional

By Edith Holmes
Of the CW Staff

NEW YORK — The U.S. government has refuted charges that Justice Department use of Federal Bureau of Investigation (FBI) agents to interview IBM's witnesses in the antitrust case now on trial is unconstitutional [CW, May 17].

In a 24-page memorandum filed with the court here last week, attorneys for the Department of Justice stated: "IBM, recognizing the current special concern by all three branches of the government for the rights of innocent third parties who may be involved in security investigations, has attempted unsuccessfully to bootstrap its way into a constitutional issue."

The government, through affidavits from Department of Justice and FBI personnel and in arguments, sought to demonstrate that the use of FBI agents to interview IBM's trial witnesses is a usual and normal practice employed by other civil litigating divisions in the Justice Department in addition to the antitrust divi-

sion.

"Because the object of the government and the court is a just, prompt resolution of the issues in this case, we propose to the court that all witnesses be informed of ground rules governing the interview of witnesses by the opposing party," the government's memo said.

IBM Advocates

Responding directly to the affidavits submitted with the IBM papers from former attorney generals and a deputy attorney general, the government noted two out of the three were made by men who are currently advocates for IBM.

Nicholas deB. Katzenbach, who served as attorney general in the mid-60s, is now vice-president and general counsel for the corporation, and Warren Christopher, who was deputy attorney general from 1967 to early 1969, is currently employed by the Los Angeles law firm of Omelveny & Myers, which is part of IBM's legal defense team.

The third affidavit by former attorney general Ramsey Clark, under whose administration U.S. vs. IBM was filed, represents "pure speculation," according to the government. Clark's statements "about what he would have done while attorney general are based solely on the representations made to him by defendant's counsel," attorneys with the Justice Department said.

Urging the court to recognize "the flimsy character" of IBM's arguments

IBM Cuts Memory Prices

ARMONK, N.Y. — IBM has cut the purchase price of a variety of products from its Data Processing Division (DPD) and General Systems Division (GSD).

The reductions range from a minimum of 4% for 370/115 memory to a maximum of 35% for memories from GSD, the corporate announcement said.

DPD reduced purchase prices on expanded memory models of a number of products utilizing Mosfet memory technology. This memory is offered with the 370/115, 125, 158 and 168 systems and with the 3704 and 3705 II communications controllers.

The decreases reflect cost reductions including improved manufacturing techniques, IBM said. The purchase price reductions for expanded memory range from 7% to 35%.

The effect of these changes on a

370/115-2 with 160,000 bytes of memory is a reduction of approximately 4%; on a 370/168-3 with 4M bytes it is approximately 5%.

In addition, purchase prices on the IBM 2880 block multiplexer channel and some associated features were reduced by 30%.

GSD lowered purchase prices on expanded memory models of the 3/8, 3/12 and 3/15 systems, the System 32 and the 5100 portable computer, which utilize Mosfet memory technology. The purchase price reductions for expanded memory range from 10% to 35%.

In addition, purchase prices were reduced by 10% to 15% for CPUs and some associated features of the 3/6 and 3/10, System 7, the 1130 and the 1800 data acquisition system.

All price changes are effective immediately, a spokesman added.

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Audit Finds Fraud Potential in SSI Operation

(Continued from Page 1)

to change the address of an SSI recipient who died rather than remove the person from the payment schedule, according to the audit.

At the same time, the audit found, the region's system of internal controls does not provide adequate accountability for cash items received at the district offices.

Thirdly, the study noted, "the system for periodically redetermining recipients' eligibility was backlogged to the extent that it was not effective for assuring that accurate payments were made to eligible individuals."

And a "significant" backlog of local or one-time payments had yet to be entered into the computer system, HEW auditors said.

No Fraud to Date

While the auditors found no evidence of fraud to date, they acknowledged "detection would be difficult and there is no assurance such activities have not taken place."

The HEW report recommended SSA separate, or specialize, payment functions at its district offices so more than one person would be required to make case changes. The agency has commissioned a "central office work group" to study means of further securing the computer system.

The major problems in the California region were attributed by the auditors to insufficient staffing at the district offices, computer system limitations and malfunctions and other planning and operational flaws for which SSA headquarters, and not the field offices, were responsible.

The auditors said they would issue separate audit reports on federal/state liability relating to the federal administration of SSI payments in California, Hawaii and Nevada.

Noting these reports will show 44% to 56% of the sample claims examined in these states contained errors, HEW stated, "The erroneous overpayments and underpayments resulted from a combination of circumstances and it was not feasible to

against the use of the FBI, the lawyers for the government argued emphasis should be placed on the central issue of this case — the monopolization charges — rather than on sidehows like this one.

They stated that the sole purpose of the interviews was to obtain information relevant to the trial from these people. IBM's right to a fair trial is not affected by this use of the agents, the government claimed.

Thus far, the conduct of the FBI agents has been consistent with the regulations under which they normally operate, the Justice Department memo added.

In an affidavit accompanying the government's papers, one agent said that if a

prospective witness contacted for interview in any antitrust litigation asked that such a meeting not take place, that fact would be reported to the antitrust division either in memo or report form.

"When an individual evidences a reluctance to be interviewed, no effort is made to persuade the person to consent to further interview," the agent said. "No list or index is maintained by the FBI of those individuals who agree to be interviewed, and no list or index is maintained by the FBI of those individuals who refuse to be interviewed."

Judge David N. Edelstein, who is hearing the case without a jury, will reach a decision on the matter by June 2.

determine either the dollar amount or the rate of occurrence for errors directly caused by operational weaknesses at the district offices."

At the same time, "corrective action needs to be taken at the national level," the report added. HEW auditors recommended SSA implement effective internal controls and operating procedures at the district office level "with particular emphasis on the processing of repayments, eligibility redeterminations and manual payments processing."

Placing responsibility for automated processing and recordkeeping at the agency's headquarters, they stated "SSA at Baltimore should also intensify efforts to resolve computer system limitations and reduce the occurrence of malfunctions."

SSA has sent some 1,065 temporary employees and 150 full-time employees to California to ease the understaffing problem. New money controls are said to have been implemented.

AT&T Trying Hard to Sell Bill

(Continued from Page 1)

equipped to handle large volumes of mail, but two staff members have been assigned to fill the congressional requests with the aid of automatic typewriters. Much of the mail has to be answered with a form letter due to limitations of time and manpower, the FCC staff member said.

Bureau 'Misguided'

In one typical letter from an AT&T stockholder in Arizona, the "Common Carrier Division" was referred to as "misguided" and the writer said it was his opinion that "it has been staffed with key personnel with a bias against the Bell System."

"The Division would very much like a situation where it would be able to play one outfit off against another. The results of such gamesmanship are only too apparent in the results of regulatory agencies."

"I therefore urge you to support [the

Meanwhile, the agency's computer system in Woodlawn, Md., is being audited by the General Accounting Office (GAO) and under fire by at least two congressional committees.

At a meeting earlier this month of the House Ways and Means Oversight Subcommittee on the problems encountered with SSI, Rep. Charles A. Vanik (D-Ohio) expressed his concern for the potential for employee fraud in light of this and other HEW audit reports of several SSA regions and recent reports by the GAO on computer-related crimes and the need for management to provide better protection for federal DP facilities (see related stories on Page 1).

Part of a series of SSA system audits now underway by HEW, the California study focused on the performance of the SSI between January and July 1974, which were the first six months of the program and the only time period of its operation that has been subjected to extensive investigation.

legislation] and to permit this country to continue to enjoy the world's finest communications system," the writer said.

Another letter from Florida, also from an AT&T stockholder, said it "is time for Congress to look closely at the direction in which the FCC is trying to take an effective communications system."

Correction

The former U.S. Deputy Attorney General who said the Justice Department was making a potentially serious mistake in using agents from the Federal Bureau of Investigation to interview IBM's trial witnesses was Warren Christopher [CW, May 17].

Christopher, who served as Deputy Attorney General from 1967 to early 1969, is now with the Los Angeles law firm of Omelveny & Myers, which is part of IBM's legal defense team in the government's antitrust suit against the corporation.

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Chicago Drake Hotel June 17-18

Data Communications Course #1010 — Practical Data Communications Systems & Concepts

Dr. Dixon Doll, the nationally recognized teleprocessing consultant will lead this two-day seminar on the newest advances in data communications. The course covers areas like SDLC, HiD-LoD, DDS, newly approved major revisions to WATS, and the impact of Satellite Carriers.

Total Cost, including workbook, reference materials luncheons and continental breakfasts is \$350. Additional registrants from the same company qualify for the reduced rate of \$300.

New York Plaza Hotel June 14-15
San Diego Plaza International Sept. 27-28
Denver Denver Hilton Oct. 18-19
Miami Holiday Inn Nov. 15-16
Airport Lakes

Data Communications Course #1020 — Advanced Teleprocessing Systems & Design

Also led by Dr. Dixon Doll, this course is a follow-up to course #1010. Special emphasis is given to techniques that minimize operating costs in commercial data communications networks. This three-day seminar covers procedures, approaches, and algorithms for evaluating and cost-optimizing network operations. Total cost, including an extensive set of customized course materials, is \$450. Additional registrants from the same company qualify for a reduced rate of \$400.

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Under the instruction of Roy N. Freed, a nationally known lawyer, author and educator in the field of computer law, you'll learn how to increase your advantage in dealing with vendors that supply your installation. As well as practical discussion and review of your own contracts, subject areas covered in this 2½-day seminar include: Negotiations, Contracts, Warranties, Avoidance and resolution of disputes, Security, Fraud, Taxation, and Techniques for handling any transaction. Cost for the entire seminar, including continental breakfasts, luncheons and all course materials is \$325. Additional registrants from the same company are charged only \$275.

Chicago Hyatt Regency O'Hare June 16-18
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How to Increase Programming Productivity

John W. Brackett, PhD, Vice President of SofTech, Inc., will lead this two-day seminar for technical managers on the state of the art of Software Engineering. Under his direction you will learn how to: create more precise and visible analysis and design; reduce integration problems; improve software reliability; incorporate visible outputs into the software development cycle; increase programmer productivity; and improve programming management methods. Topics covered include: Structured programming; Top-down analysis, design, implementation; and Chief Programmer teams. Cost for the entire seminar, including continental breakfasts, luncheons, and all course materials is \$300. Additional registrants from the same company are charged only \$250.

Atlanta Hyatt Regency Atlanta May 3-4
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Saul Stimler, author of *Data Processing Systems: Their performance, evaluation, measurement, and improvement* will lead this two-day seminar on measurement techniques designed to save your installation money. As well as system performance at your own installation, topics covered include: Criteria for quantifying performance, pencil and paper analysis of a system, Benchmarking techniques, Realtime, Batch and interactive time sharing systems.

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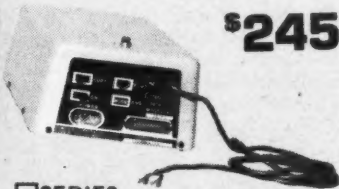


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System Sifts Ariz. Garbage Can Data

By Catherine Arnst
Of the CW Staff

TUCSON, Ariz. — Every time someone here throws something out, he is faced with the knowledge it might be analyzed with a computer at the University of Arizona.

That's what is being done by the Garbage Project, a three-year-old program dedicated to finding out what Americans throw out. And, according to the project's findings, Americans throw out about 10% of the food they bring home.

The Garbage Project comes under the auspices of the Department of Anthropology and works under the theory that by looking at trash one can better understand human behavior, according to Wilson Hughes, assistant director of the project.

Students collect the trash with the cooperation of the municipal Sanitation Department and they catalog each item of an individual household's garbage. Approximately 10 houses per day are analyzed, and they are selected at random from within census tracts that indicate demographic and housing characteristics.

The students fill out computer-formatted forms in which they note the census tract number, volume of the garbage, number of items, the category each item comes under, the brand name, packaging and whether it is straight waste

(thrown out before serving) or table scraps.

The data is punched onto computer cards, run through a Control Data Corp. CDC 6400 and analyzed by a Fortran program written within the department.

Garbage on File

Approximately 100,000 pieces of garbage have been analyzed and are on file so far. In 1973, 222 households were studied, 388 in 1974 and 208 in 1975.

With the results generated by the computer, students compare the discard and consumption habits of different parts of the city. They have discovered that middle-income groups waste more than low income groups. "There is 20% to 40% less waste below the poverty level," Hughes said.

It was also found that lower income groups eat less protein than others, but that they have better balanced diets, whereas middle-income groups eat more junk food, Hughes said.

When looking at the garbage thrown out as a whole, 60% of the total waste is straight waste, and the items thrown out the most are fresh fruit and vegetables and bread, Hughes said.

The amount of table waste has decreased in the three years the project has been in effect, which has lead one nutritionist working with the project to assume that families were coping with high

food prices by decreasing serving size but not altering buying habits that much.

When the project started in 1973, during the meat shortage, it found "quite a bit of food waste," but there was less waste when prices went down during 1974, Hughes said.

He attributed this to people buying cuts of meat they were not used to or buying more than they could store.

Beer Boom

An off-beat discovery was made by one student, in his own analysis of the data gathered by the Garbage Project. He found that more beer is consumed when there is a full moon.

The idea for the Garbage Project originated from an assignment given to anthropology undergraduates to look at the modern world and find a relation between material culture and behavior. One student chose to do this by looking at garbage, "which is part of our material culture," Hughes said.

The project is funded by the University of Arizona, the National Science Foundation and some private industries such as Chevron Oil, Alcoa and General Mills. The Environmental Protection Agency also might grant funds to do a study of packaging, Hughes said.

One of the original purposes of the project was to communicate the information garnered from the studies to the public, so that they would become aware of their habits.

"The feedback has been very positive," Hughes said. No garbage is identified by name or address, and no personal mail is recorded, so the anonymity of the waster is protected, he said.

Hughes could not say, however, whether the project has made a difference in the waste habits of the citizens of Tucson.

DP Seen Helping End Restrictions Of Interdisciplinary Approach

DARTMOUTH, N.H. — The computer is a possible key to help free scientific thought from the restrictive confines of the various academic disciplines, according to a networking authority for the National Science Foundation (NSF).

"We live in a world that is more and more knowledge-dependent or rather technological knowledge-dependent," Dr. Walter Sedelow, director of science networking for the Division of Mathematical and Computer Sciences of NSF said at the annual meeting of the New England Regional Computing Program (Nercomp) at Dartmouth College here recently.

"In this context, a serious problem exists in getting scientists to work across disciplinary lines. They'll work together to get money, but it's much harder to get them to collaborate together in substantive research and educational enterprises, Sedelow said.

"In educational institutions, we've not yet come to terms with the need for a massive adjustment in an interdisciplinary approach to problems in a full-systems way, in the best tradition of the liberal arts."

Acknowledging that he was less than optimistic about the ability of man to solve the mounting problems of contemporary society, Sedelow said in his view only two major regions of the country are in a position to mobilize the scientific resources of the area to deal with immediate problems.


These regions are Southern California and New England, he said.

"We need a distributive laboratory as both a research instrument and a pedagogical device," Sedelow maintained, "and also as a means to achieve a sense of social cohesion through intellectual enterprise."

He saw the computer network as a way of bridging gaps between faculties of various institutions, the isolated and lesser known as well as the renowned universities, and "mobilizing their technology to enable people to work together who have something to say and something to do, no matter where they may be."

To begin to achieve such ends, computing networks have to be geared to provid-

ing scientists what they need, not what programmers think they need, he cautioned.

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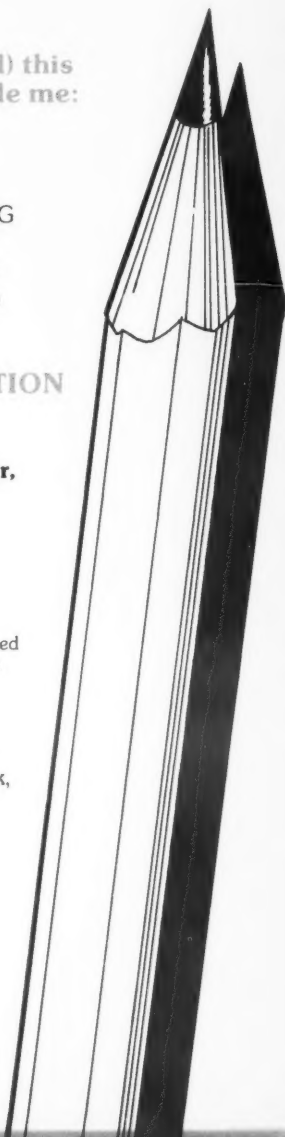
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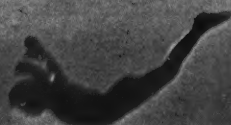
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Editorial

Learning the Hard Way

The findings of the recent investigation into the jail suicide of young Steven Karagianis in Yonkers, N.Y. [CW, May 17] proved once again that computers are only as good as the people who interface with them.

According to the young man's mother, Karagianis killed himself rather than spend even one night in jail. She said he had been in jail once before and the experience was so horrifying that he didn't ever want to end up there again.

Whether Karagianis overreacted to his incarceration is not for us to judge. However, it is appropriate for us to expose the kind of mismanagement that would lead to jailing a person on the say-so of a communications operator with 16 hours of training in police communications.

It is also appropriate for us to question why a law enforcement agency doesn't assure that warrants are outstanding before police officers are sent out to arrest citizens.

It is inexcusable for a communications operator who is responsible for receiving coded messages and for translating those messages to police officers in cruisers to be fuzzy on the meanings of those standardized codes.

Police officers use the information relayed to them by communications operators to make life and death decisions every day.

Nowhere was that more apparent than in the roadside death of Frank D. Booth who was shot by a Florida state trooper in the belief that Booth was driving a stolen vehicle and that he might be dangerous [CW, Dec. 10].

In the Florida case that information was received from a communications operator who corrected the erroneous transmission within seconds, but a correction even seconds later was too late. By then, Booth was already dead.

The computer has become the lifeblood of 20th-century law enforcement in America. There is no excuse for underestimating the importance of the individual who accesses the data it contains.

Furthermore, it is about time the Federal Bureau of Investigation and its National Crime Information Center (NCIC) acknowledged that even police officers are only human — that they can make mistakes.

The Karagianis case proved that too much information can be as dangerous as too little information. It was clearly unnecessary to maintain a wanted record on an individual who is no longer wanted by any police jurisdiction simply for the convenience of the NCIC bookkeeping procedures.

It is sad, indeed, that an innocent citizen has to die before bureaucrats will give faulty procedures enough attention to bring about a change.



"Sorry, Mr. Dinwiddy, I Can't Afford to Print a 346th Copy Just For You. . ."

Letters to the Editor

ICCP Asks Help in Developing Exam to Test Business Programmers

We of the data processing profession have cried for years for a tool by which we could measure the technical abilities of computer programming and software people. The Data Processing Management Association (DPMA) started in this direction through the Registered Business Programmer (RBP) exam.

As many know, DPMA turned all of its testing

programs over to the Institute for Certification of Computer Professionals (ICCP). ICCP, through its eight member organizations, has completely revitalized the Certificate in Data Processing (CDP) exam. It will now be doing the same with the RBP exam.

To accomplish a task of this magnitude will not be easy.

For this reason, the ICCP is asking for the submission of multiple-choice questions for consideration of inclusion in a question pool for this new exam.

ICCP asks that these not be nit-picking questions about a particular operating system, but questions testing the knowledge of a top programmer.

Please submit all questions to:
Computer Programming Exam Questions
ICCP

Attn: Dr. Sallyann Henry
304 E. 45th St.
New York, N.Y. 10017

Robert L. Huskins

Frankenmuth, Mich.

Definition Neglects Due Process

John Kannarr's letter [CW, May 10] defined two classes of personal data: data given freely by the individual for a specific purpose and data not given but "earned" by a company — i.e., when an individual defaults on a loan (Kannarr's example).

He maintained that "earned" data should be salable at the discretion of the company "earning" it.

This position neglected a fundamental concept of our society: due process. In effect, Kannarr said a bank should be allowed to "convict" a person of financial irresponsibility without benefit of trial.

When due process really works, everyone is protected, not just the strongest or the loudest.

Alan Schlusmeyer

Pasadena, Calif.

Scare Techniques Used

It disturbed me to see misinformed people using scare techniques to prevent privacy legislation. No one is against data gathering for research, as William A. Fenwick seemed to imply in the May 3 *Computerworld*.

It is quite feasible to do the most elaborate studies and still protect the individual's right to privacy.

Particularly now with the disclosures of the abuses of the U.S. intelligence community, lawyers in particular should be concerned about dossier collecting which does require a name and a universal identifier.

B.F. Medina

Mansfield, Pa.

(Other letters on Page 12.)

Data Past

Eight Years Ago
May 22, 1968

WASHINGTON, D.C. — Dr. Carl Hammer, director of scientific and computer services for the Univac Federal Systems Division here, advocated the use of a computerized ballot casting system for local, state and federal government elections. He said the technology was available; such a system would increase the number of people voting; fraud could be eliminated; and the cost would not be prohibitive.

WASHINGTON, D.C. — Eleven independent software firms, with sales of more than \$100 million annually, formed the Association of Independent Software Companies (AISC). The purpose of the trade association was to handle common problems in the industry.

Five Years Ago
May 26, 1971

ATLANTIC CITY, N.J. — The general public is more worried by "what it suspects but does not know" about the impact of computers, Sir John Wall said at the Spring Joint Computer Conference (SJCC) here. A result of this public attitude would be the federal imposition of regulations on the industry if the industry did not "police itself," he said.

ATLANTIC CITY, N.J. — In a "Competitive Evaluation of Interactive Systems" by the Ford Motor Co. here at the Spring Joint Computer Conference (SJCC), Burroughs Corp. took top honors in the benchmark comparisons of large time-sharing systems for ease of use, computing power, reliability and support software. RCA fared the worst in the comparisons; the other companies' mainframes, in descending order, were Control Data Corp., Digital Equipment Corp., Xerox Data Systems, Honeywell, Univac and IBM.

Anti-Obsolescence

The toughest task in our trade is to keep up; to learn the new techniques, or the new buzzwords for the old techniques; to take a quick look at new hardware. And of course whole vistas open up every few years: data communications, which is a world in itself, with weird acronyms, and protocols as well as programs; security technology, hard and soft; the mini/micro revolution.

And the Red Queen was right: "... it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!" For advancement, that is, you must *add* skills, not just update your old ones. You're in data processing? Take a calculus course! You're in computing? Take accounting! You're a back-room type? Take a management course, and maybe one in abnormal psychology! You're a high-level manager? You're a high-level manager? How about learning *The Hustle* at Arthur Murray's?

OK, you did it: you attended a long seminar, took a night course, read an appropriate text. You mastered Ambition, Distraction, Uglification and Derision, as the Mock Turtle recommended. Now, how about the diploma, the medal, the graduation ceremony (and secretly, of course, how about the raise)? Well, in some cases a diploma *is* provided. But for many intellectual exercise sessions, especially the self-improvement kinds, something else is needed — something more general, something easily recognized.

Here the professional societies can help. The DPMA recently handed over to the new Institute for Certification of Computer P(rofessionals, eople, rogrammers) the CDP examination. Pass the test: be Certified! But at least two things were lacking. First, there are many areas less frequented than mainline data processing, and higher levels than basic even along the Main Line. Second, the acts of test-taking and especially of test-failing are not

pleasant ones. For those long out of the examination mode, for those exposed in some way, for the poor, the proud, the perverse, testing and certification are painful.

A new concept has just been publicly unveiled: self-assessment. A special ACM committee has pulled back the curtain, in the May *Communications*. I quote a key sentence: "... [the procedure] is not for an individual to satisfy others about his or her knowledge; rather it is for a participant to appraise and develop [that] knowledge." A sample, fragment of one of the assessment procedures, is given, along with "suggested" responses and specific references to books or papers for each question. It looks great, but that really isn't the crux of the matter. The central issue is the novelty, the fresh technique.

Does it threaten the CDP? Surely not, either as certification now stands, or after hoped-for improvement. In fact, I assume many self-assessed persons will feel encouraged, and will move toward the more formal process. Does it threaten the current apparatus of seminars and short courses and book-learning? No, except in directing participants more accurately toward subject areas for which they see a clearer need.

Are the procedures too narrow, too specific? Well, we'll need much larger samples, and more experience, to tell — but all tests, self-administered or otherwise, have to be sampling procedures, whether the ACM attempt, the CDP exam, or a Ph.D. oral. There is a real art involved; if the self-assessment idea flourishes, expertise will be available.

Does it have to be ACM? Not in the long run, certainly; in fact, ACM people assume the same concepts must be at work in entirely different fields already, notably in medicine. But they should get credit, both the committee and the Council, for an early entry and a vigorous thrust. I would be unhappy, for instance, to see the IEEE Computer Society do the same thing in software and applications areas ("software

engineering"), while welcoming their adoption of the idea in non-ACM precincts: compentry, peripherals, systems architecture, test hardware. Also the possibility of a broader approach via ICCP or AFIPS is already in many minds, and will certainly be explored.

Obsolescence is costly; no one knows how costly, but whole countries can wither from it: the British industrially, the Italians socially — and perhaps the Americans? In our trade, where half or more of the tools we use and the knowledge we apply are less than a generation — six years — old, drastic measures were needed. I believe the ACM initiative is the most imaginative such measure yet suggested, and urge every reader to look the self-assessment samples over carefully. We all are subject to the Paul (Armer) Principle: individuals often become incompetent over time at a level at which they once performed well.

Those still fresh and green will shrivel; older inhabitants will become extinct; antediluvians like me... The Aeneid says it: "Facilis descensus Averni... but to climb back again, to retrace one's steps to the upper air — there's the task."



Herb Gross

Solves Mail Duplication Problem

Rosa Index File Helps Avoid Merge/Purge Overkill

One of the advantages of studying a specific computer-use area, like mail-duplication problems, for instance, is that it brings out the wide variety of management actions that are available to assist in the quality control of data processing systems in general.

Such a management action, which I think has wide implications although currently considered just in the mail-duplication area, has been suggested by a reader, Paul R. Rosa, of St. Paul, Minn.

Rosa is a systems programmer who has been watching the mail duplication problem with concern. He agrees that some better method of eliminating duplicates is desirable and hopes that such a method can be developed soon so that what he calls "the negative image (of data processing) that duplicate mailings cause" can in turn be eliminated.

However, he is not satisfied with the current methods of eliminating duplicate mailings. This is not because they don't work — he acknowledges that they do. The problem with them, as Rosa sees it, is that they may work too well. Rosa sees them eliminating nonduplicated addresses as well as genuine duplicates. He is worried about "overkill," and quite rightly so.

The background for his concern comes from the trucking business. He pointed out that he has seen as many as three

company names, all similar in spelling and all using the same mailing address. All the elimination algorithms he has seen would remove two of these companies, although they are actually valid ones.

Problem of Facts

His problem is one of facts. There is nothing theoretical about it. An address is either right or wrong. The proper way to answer such a question is to go to the address concerned physically and look for both people. Naturally, this is not done. It is too expensive in almost every case. All the merge/purge programs that try to eliminate duplications are simply attempting to "guesstimate" what would happen if someone actually made an on-site visit. No more and no less.

Realizing this limitation of mailing duplication programs, Rosa took a different approach. He argued that an address, if it is real, will be reflected in ways other than by comparing strings of characters or even eyeballing. Mistaken addresses also, in time, build up activity patterns which can assist in making determinations of error/nonerror.

The key words here are those two little ones — "in time." Rosa has added to our repertory of weapons the always emerging history and calls on data processors to take into account the fact that history is available to us. The decision to ignore it, taken either consciously or unconsciously, is something that is our responsibility and not something that is forced upon us by the state of the art.

Rosa saw the method of taking historical facts into account as involving an "index" or "alias" file. Any item that is not an exact duplicate of an existing

entry is noted during update operations and then is added to the index file.

Where, on periodic review, it turns out that an entry is either misspelled or is accurate although different, a pointer is set up in the file, and one or the other address is selected for use.

The duplicate entry in the main file can then be eliminated, after having been there for only a short space of time. However, it remains in the index file to help to clarify any later confusions.

This is a good method. Rosa pointed out that the output needing manual review quickly drops off to minimal levels after the system has been in operation a relatively short period of time. Cost of operation, as opposed to initial setup, is therefore controllable.

It is the setting up of the system which does involve a considerable one-time cost that makes the system often appear too expensive to use for mailing lists. But I really have not seen any good analysis that shows just what the costs really are — so I can't agree with such a conclusion.

Possible Developments

Moreover, I think the system has other possibilities Rosa has not brought out. While he is showing that duplicates can be eliminated, the system also provides for nonduplicates to be positively identified. Then presumably, a nonpointer, or difference statement, could be put into position.

For instance, if XYZ, Inc. and XYZ Corp. both happen to coexist on Happy Lane, Your State, and this is once found out, then a nonpointer could join the two addresses, working in both ways.

Such a nonpointer could bring out what the distinction between the two near-identities was. Later, when a potential duplication had to be resolved, this distinction, held in the index file, would be able to resolve the problem correctly — without eliminating valid entries, which was Rosa's worry.

This suggests that the pointers and nonpointers go further and store with them identification of areas of confusion that are, or are not, material. If this confusion identifier is added to the Rosa system, it appears to add the necessary safeguards of validity which in turn permit a more rigorous weeding out of actual duplicates.

All this is possible and provides computer systems with the ability to improve with age. No one, and certainly not John Q. Public, expects everything to be right first time. But the public does expect computerized systems to not keep blindly following error paths.

The Rosa index file appears to provide a method whereby such repeated errors can be avoided. It is a new and different concept which appears to provide a workable alternative to merge/purge problems; particularly to operations that repeatedly provide mailing or other similar services.

With the current constant reduction in the cost of processing power, the cost of such improved service is not clearly out of a user's reach this year — and will be still less in the years to come. I commend it to you as a method of improving quality in your area.

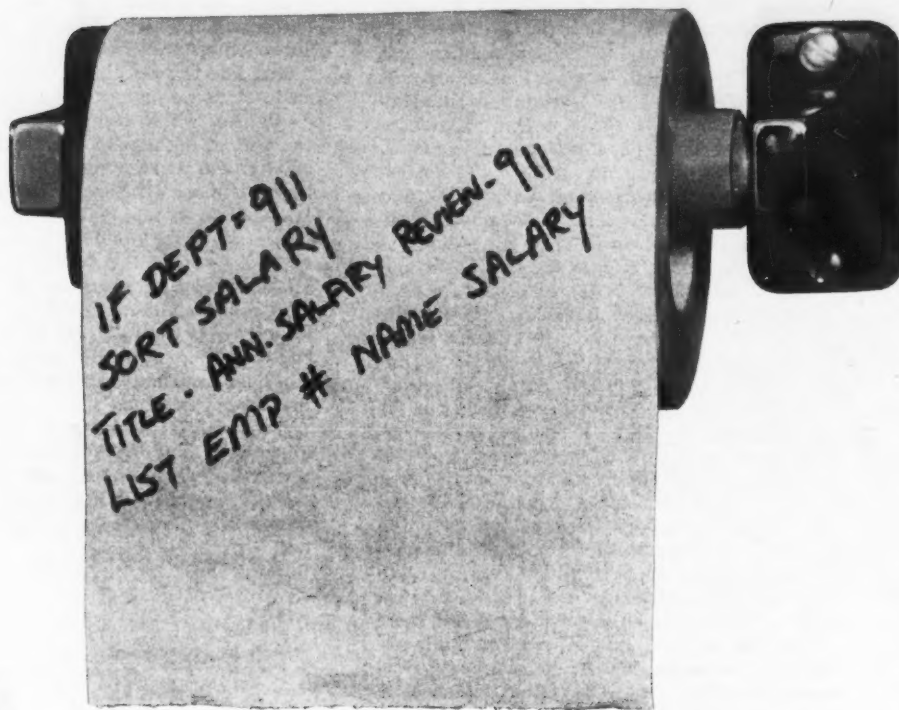
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The Taylor Report

By

Alan Taylor, CDP





An Easytrieve Coding Form

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Letters to the Editor

Speech Intent to Describe Possible Future Problems

There were some inaccuracies in the article, "Laws Often a Factor in Net Decisions" [CW, May 3].

First, as I mentioned in my speech, the reports that were printed in Vancouver were not reports that came from the Nordstrom Corp., but were reports of another company for which I had worked previously.

This situation would also affect Nordstrom or any other corporation which intends to take computer listings and tapes across the border into Canada. Nordstrom does not operate in Canada.

Second, the Canadians are not necessarily "threatening." That is an inappropriate word; they have published a study which suggests that data should be taxed and that data on Canadian citizens should be retained in Canada rather than allowed to cross the border. There has been no threat, as yet, of carrying out the study's suggestions.

Third, the area of chargeback has not caused Nordstrom accounting problems.

Fourth, the network we have consists of NCR 725 minicomputers in Anchorage and Seattle, Washington. There is no mini in Tacoma, and San Francisco is only the network point for satellite communication service to Alaska.

Fifth, the intent of the speech was not that Nordstrom has these particular problems today, but that Nordstrom, or any other company, may face these problems in the future.

Landon Miller

Seattle, Wash.

Change for Sake of Change

The National Association of Wholesalers (NAW) is trying to establish a single uniform numbering system for all items which travel through all distribution channels.

NAW is taking the National Association of Electrical Distributors (NAED) four-position manufacturers vendor number and adding a two-position prefix which will now make an 11-position number.

The prefix was to represent a particular industry, but I have been told this idea has been abandoned. The prefix addition is still going through, but now it is being assigned in a completely nonsignificant manner.

There seems to be a great deal lacking on NAW's and NAED's part in explaining just what their objectives are and what they eventually are trying to accomplish.

We live in a constant state of change, but to be forced to change without knowing why and how it might better my company is utterly ridiculous.

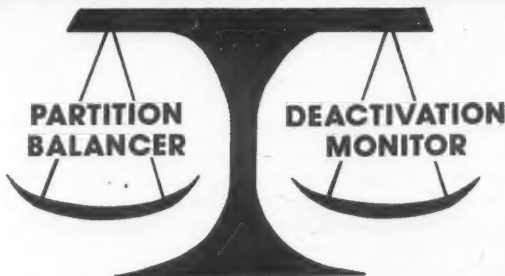
Michael P. Eiseman

Chicago, Ill.

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In Joint Datapro-Atsu Study

Time-Sharing Services Get 'Well Done' From Users

By Don Leavitt
Of the CW Staff

DELRAN, N.J. — Users of remote-computing services are "generally well pleased" with what they're getting when measured by one set of criteria. But there is "plenty of room for improvement" elsewhere, according to a recent user survey.

Users responded very positively in terms of overall satisfaction, ease of use for experienced or DP-oriented users, languages and compilers provided, reliability and response time, the survey found.

On the other hand, cost-effectiveness, technical support, training, documentation, application packages and ease of use for inexperienced users all polled lower scores, according to the results.

In the survey, run jointly by the Association on Time-Sharing Users, Inc. (Atsu) and Datapro Research Corp., users were asked to rate any and all remote-computing vendors with whom they did business in 13 categories on a scale of 1 to 4, with 1 representing "poor" and 4 "excellent."

The survey was based on a questionnaire, primarily designed by Atsu, which was mailed to 2,500 association members or interested people and 500 or 600 Datapro subscribers earlier this year.

Qualified responses were received from 475 users of remote-computing services in the U.S. and Canada. Both Datapro and Atsu appeared pleased with the number of responses, but Datapro noted its subscribers and Atsu's members "may not constitute a completely representative sample of 'typical' users."

'Superlib' Gains Audit Trail

JACKSONVILLE, Fla. — Generic Systems, Inc. (GSI) has the Superlib library management package and added a pair of routines that can be used with the package (or by themselves) in IBM-based installations.

Superlib Version 3.2 includes support for an update audit trail, flexible text editing, extended library management reports and closer ties to IBM's Power/VS spooling facility.

One of the freestanding but complementary routines creates cross-reference lists of the sources of all COPY and CALL statements and the library members or subprograms that have been the subject of such commands.

The other "independent" routine supports updating of the core image and relocatable libraries. It supports modification of either library from any partition, including simultaneous updating of the same library from both foreground and background at the same time, GSI said.

Despite the vast number of vendors in the service area surveyed, nearly one-fifth of all responses (134 out of 726) were addressed to General Electric's offerings, which earned a 3.0 weighted average of all ratings applied to it in all 13 categories.

The Service Bureau Co. ran second in number of responses with 80, but garnered a slightly higher weighted average of 3.07. Tymshare, Inc. was third in number of responses (46) and came up with a 2.96 weighted average.

Fourth highest in responses (40), Computer Sciences Co. collected a weighted average score of 3.02 while fifth-place National CSS, Inc. (with 36 users) eased off to a 2.92 weighted average score.

NCR Unbundles Software Prices With Costs of \$5- to \$150/Mo

DAYTON, Ohio — NCR has adopted a policy of pricing selected, newly acquired software separately from the hardware on which it is to be installed. Previously most NCR software was included in the price of the equipment.

The policy affects both rented and purchased computer systems, the company said, but there will be no change in pricing for Century users of software installed or on order prior to May 1, a spokesman said.

Current Century users who move to

Five other vendors — Cyphernetics, Compu-Serv Network, United Computing Services, Comshare and Control Data Corp. — also tallied more than 20 responses each. Together with the first five, they accounted for 458 or nearly two-thirds of the 728 responses received.

Comparisons Challenged

Although Datapro listed the detail "votes" for all vendors who received five or more responses, the validity of the smaller groups and the value of comparing them to the more popular vendors has been challenged by some observers.

With only five ratings being averaged, even one that is unjustifiably high or low can warp the outcome far more than would be possible in the larger samples,

these analysts explained.

Highest weighted average rating of all was earned by Interactive Science Corp. with a 3.38 based on five ratings.

Many users commented on experiences with two or more vendors and the average number of companies mentioned was 1.56.

This reflected a slight downward trend from last year's reported average of 1.74 vendors per response, but a Datapro analyst shrugged off the difference as "insignificant," especially since the current survey evoked four times as many responses as the last one.

Fortran Most Popular

Taken overall, the user's responses also showed that interactive time-sharing or problem-solving is still the predominant use of the network facilities, in terms of numbers of jobs although not necessarily cost, and that Fortran is still the most popular language.

The 41-page "All About Time-Sharing and Remote-Computing Services" report on the survey results also includes discussions of how a user should choose a remote-computing vendor and comparison charts of what a number of the networks offer, as well as addresses of their national headquarters.

The report costs \$10 and is available from Datapro at 1805 Underwood Blvd., Delran, N.J. 08075.

Financial Modeling

Focus of Atsu List

NEW YORK — A loose-leaf listing of financial modeling languages is being distributed to members of the Association of Time-Sharing Users, Inc. (Atsu) as the first portion of what is expected to be a comprehensive directory of the time-sharing and remote-computing industries.

The association needed a directory "that would [show] us the options available, with enough information about each product to enable us to narrow down our choices before we start detailed analysis," a spokesman explained.

More Than 60 Entries

The current publication includes more than 60 entries. Formatted descriptions of each, provided by its vendor or developer, features as well as where the facilities are available.

A foreword provides an overview of the different types of modeling languages now on the market.

Information about the association and its publications is available from Atsu, 210 Fifth Ave., New York, N.Y. 10010.

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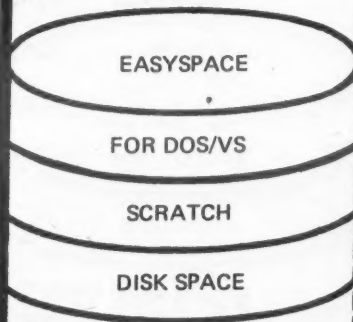
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Ask What Package Won't Do Before Buying, Mini Users Told

SAN FRANCISCO — A user buying a minicomputer application package "should really look into the code" to find out what the package will not do, Steven E. Richfield, an independent consultant, told a Computer Caravan workshop here recently.

The user should ask whether buying a software package is really justified, Richfield said. If "even a relatively small improvement in the amount of time it takes to get things going" in the business represents a cost savings to the user, the purchase is usually justified, he explained.

"Watch out for software from hardware manufacturers," Richfield cautioned. The slower the package runs, the more hardware the user will need to run it, he said.

"When you are dealing in business, you really should deal with someone who has

an interest in making it work," he added.

Users usually give insufficient thought in defining what tasks they want the software to accomplish, he said. "Sit down and really dig in before you ever put your name on the line," he advised.

Users should also avoid one-person package evaluations, he warned. They fail because a single person selecting a package doesn't ask "How can this be done a whole lot more simply and still run the business?"

Another problem in selecting packages is that the business manager may underestimate the paper flow, Richfield said.

Places to Start Looking

To find a package, users can contact places that list packages such as Auerbach Publishers, International Computer Programs (ICP), Datapro Research Corp., the National Technical Information Service, users groups such as Decus and Share and the classified ad section of technical journals, Richfield said.

A user who has to revise more than 15% to 20% of a package is better off writing the application himself if he knows how to proceed, Richfield said.

The actual implementation of a software package is simpler than building up to this stage, he continued.

The user must look at the hardware and make sure the package will not put too much of a load on his machine, he added.

"If you need additional hardware, will you get it in time?" and is the effort "really a bargain in respect to the dollars for hardware?" he asked.

Dealing with a package vendor could be a sticky situation, Richfield said. The user needs to include in the contract a liquidated damages clause to prevent the vendor from leaving a project in the middle, he said.

"Penalties are a good idea, but don't overdo them. A big penalty could cause a vendor to walk," he warned.

Options Are Open

"You should really understand the written law as regards collection. If you do get into a horror story, there are options available to you," Richfield said.

However, the losses the user sustains must be very large in order to justify the dollar costs of court action, he noted.

Documentation is another important factor in buying a software package, he said: "If you are buying for a mini and it has to be custom-tailored, spell out what documentation is necessary."

Users should remember when they get a package that they are "looking at two conversions — the conversion to the package now and the conversion from the package five years from now."

The package chosen may not be easily interfaced to a future system should jobs and hardware change, Richfield said.

IUP Supports Insurance Claims Entry, Checkout

WHITE PLAINS, N.Y. — Insurance claim entry and coverage verification can be handled on an IBM 3270 CRT terminal linked to an IBM 370 by using the master policy file maintained by the Property and Liability Claims Entry Installed User Program (IUP) now available from IBM, the vendor said.

Distributed on an "as-is" basis, the program includes entry editing, support for inquiries about the status of policies and individual claims and management-level claims analysis and production statistics.

Designed to run under DOS and CICS, the IUP requires 100K.

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'Valu-Gen' Uses VCI Report Data

CHERRY HILL, N.J. — Valu-Gen from Value Computing, Inc. (VCI) is a report writer to help users of the vendor's job-accounting, billing, scheduling or tape library systems create installation-specific output not normally a part of the primary systems, VCI said.

Although input for Valu-Gen is limited to the report files already being produced by the other VCI products, sorting, accumulation and arithmetic functions typical of conventional report writers are "certainly" built in Valu-Gen, a spokesman said.

Output may take virtually any form the user requires, including graphic and matrix as well as tabular forms, he added.

Once coded, output routines may be stored for later retrieval and use by user-designated name, the company said.

This ability has also led to another part of the Valu-Gen package: support for a library of specialized reports which may be of value to particular users — those in common industry groups, for example — even though not universal enough to be built into the standard VCI packages.

This library will be made up of routines written and contributed by users and distributed by VCI as part of the package, the spokesman added.

Valu-Gen will be made available first to IBM-oriented users.

The OS-OS/VS implementation of Valu-Gen is available now for \$1,500. The DOS-DOS/VS version, expected within three months, will cost \$500, the spokesman said from 300 VCI Building, West Marlton Pike, Cherry Hill, N.J. 08002.

IEEE Seeking Papers On Data Base Design

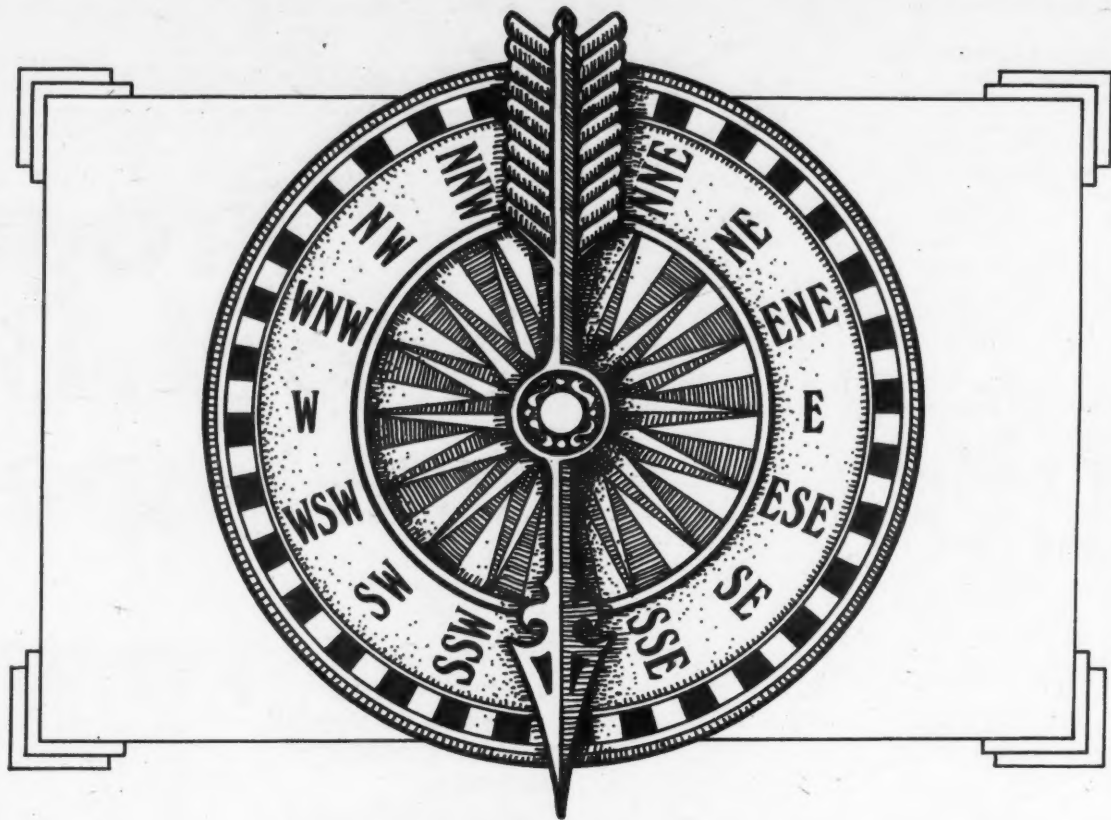
URBANA, Ill. — The IEEE Computer Society is seeking papers on operating and data base system design for a limited-attendance workshop it will sponsor at Northwestern University in Evanston, Ill. Nov. 4-6.

The workshop should include some vendor representation as well as data base system users; this mixture is necessary to have all viewpoints presented, according to program chairman E.J. McCauley III.

Topics to be covered will include requirements of data base systems for protection, reliability and recovery, their relationship to operating system design; performance questions; the use of virtual memory; and front-end and back-end system designs for the data base management functions.

Four copies of full-length papers and short summaries should be submitted by Aug. 9, to McCauley at the Center for Advanced Computation, University of Illinois, Urbana, Ill. 61801.

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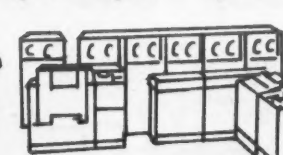
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Cobol Compiler Aids Nova Sites

EVANSVILLE, Ind. — The Cobol compiler now available from Universal Computing Systems, Inc. for Data General Nova/RDOS environments is based largely on 1968 ANS Cobol specifications, but includes two Cobol '74 modules "and various extensions," according to the vendor.

In addition to the compiler, the Universal package contains a set of file-handling utility programs including a five-key sort program and a report generator, both of which can be used in stand-alone mode, a spokesman said.

The Cobol '74 modules built into the current version of the compiler are Sequential I/O and Indexed I/O.

While the compiler appears to support many features not necessarily part of Cobol — on-line data entry and on-line inquiry, for example — the language processor requires two passes to reduce Cobol source code to object code; the "compiler" merely reduces Cobol to Assembler code.

But it does support random, sequential and keyed disk-based files; the keyed files may be

'TXTM' Handles Text and Files

WOODLAND HILLS, Calif. — The Text Maintenance (TXTM) package from Jeffrey L. Walker & Co. is said to manage the updating of program source statements in "any language," JCL procedures or "all other types" of card-formatted files in IBM-oriented environments.

It also documents all changes as they are made, the vendor added.

Controlled by parameter card entries, TXTM can be used under most IBM 360/370 operating systems and on Univac Series 70 (ex-RCA Spectra) gear as well, Walker said.

Each of the "books" (programs or other TXTM-managed entries) is posted to a random file. There it is identified by a unique book name, user identifier and version number and, optionally, provided with a password/keyword.

Developed by Joseph Sider & Associates, Inc., TXTM allows corrections to any of the books if the user is authorized by the password option; the corrections need not be in sequence.

Each book access creates an activity record which can be printed later in various user-selected sequences, Walker said.

Commands available under TXTM allow text, in the broadest sense, to be scanned and manipulated. While the package was originally built to deal with conventional DP requirements, it now includes commands suitable to a word-processing environment as well, the vendor said.

The only restriction on word-processing with TXTM is that lines of text cannot exceed 80 characters.

TXTM runs under DOS, DOS/V, OS and OS/V and is available for \$5,000 for the first year and \$500/year thereafter or can be leased for \$250/mo, the vendor added from 2069 Ventura Blvd., Woodland Hills, Calif. 91364.

indexed to any level, according to Universal.

Three levels of subscribing can be handled and conditional statements may be nested to 10 levels, the spokesman added.

In common with Cobol compilers for large-scale CPUs, Universal's allows 30-character data names and backs automatic decimal point alignment and sign control.

Identical data names may be made unique through qualification, the company noted.

Any standard RDOS-supported

configuration is acceptable to this Cobol package. A minimum configuration would consist of a 16K Nova, a 512K-word disk and a console.

Extra memory "will be used to advantage" for symbol and entry point tables, Universal said.

The package, which includes object code for the compiler and Assembler source code for the utilities, can be purchased for \$3,500.

Universal can be reached through P.O. Box 3597, Evansville, Ind. 47734.

'Fads' Fixes Firm's Fortunes

RICHMOND, Va. — The Fixed Asset Depreciation System (Fads) from Systems Engineering Computer Co. (SEC) includes maintenance and depreciation, report creation and depreciation projection modules.

The depreciation subsystem permits any three of five algorithms to be used for determining the maximum monthly depreciation of a given asset, SEC said.

Separate tax and book calculations, as well as accumulations, are provided and permit the user the flexibility of optimum methods for each purpose, according to the vendor.

Fads' report module, in addition to a general ledger interface, incorporates capabilities to select specific assets for groups of assets for consolidations, the vendor said.

Costing \$7,500, Fads can be installed on any system which supports full ANS Cobol, SEC said from 700 E. Main St., Richmond, Va. 23219.

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Outfoxing Fortran Foibles

FOXBORO, Mass. — A "significant" reduction in bulk storage requirements and a "considerable" reduction in program link time for Fortran programs are among the benefits said to be derived from the Fortran Run-Time Package (FRTTP) recently introduced by the Foxboro Co. for use on "any" Fox 2/30 system.

FRTTP provides improvements through use of a special "Fortran Run-Time File" which contains "the most commonly used Fortran subroutines." User programs linked to this file will not contain subroutines already in the file, according to the vendor.

Savings based on use of this common file will vary depending on the complexity of the user's programs, but it is expected the average user will be able to store up to three times as many programs on his existing bulk storage device, Foxboro said.

The company is in Foxboro, Mass. 02035.

For Nonprofit Units

'EHS' Builds File of Personnel Changes

WALNUT CREEK, Calif. — Offered as a module for its Payroll/Personnel System for public nonprofit institutions, the Employment History System (EHS) from Integral Systems, Inc. (ISI) can be purchased separately for interfacing with an organization's existing applications, the vendor said.

EHS can be used for Affirmative Action and collective bargaining reporting and for studies of personnel activity over peri-

ods of time. Written in ANS Cobol, it can be used on a range of computers in different operating environments, ISI said.

The module records and dates personnel changes, including retroactive ones, in a table-defined manner on a variable-length file. In addition to logging the changes themselves, EHS records the reasons for each change as well, a spokesman noted.

The package includes facilities for updating, for periodically

consolidating current period with historic data, for inputting data to simplify application programming and for displaying historic data after it has been retrieved, he added.

Any Environment

The system is not dependent on application file structures and can be installed in data base or master file environments, ISI said.

Installations may change both the format of data and the content of the history file as reporting requirements change without affecting existing programs, the vendor claimed.

An installation manual to aid users interfacing EHS with their own payroll systems is included, along with source code and program documentation, for a one-time charge of \$4,500.

EHS is included in the \$45,000 cost of the complete ISI Payroll/Personnel System, the spokesman said.

ISI is at 35 Quail Court, Walnut Creek, Calif. 94596.

Transferability

Key to 'Citibos'

CLIFTON, N.J. — Citibos from Cybek Corp. enables an installation to utilize common application programs on machines from different makers, eliminating duplication of programming effort, according to the vendor.

The system already runs on Digital Equipment Corp., Data General, Honeywell and various other minicomputers and can be operational on other desired equipment within 30 to 60 days, Cybek claimed.

Although the syntax of the language available under Citibos forces the use of structured programming concepts, there is no fixed language at the application level. Users are free to evolve a programming vocabulary tailored to particular environments, a spokesman said.

Programming is done interactively from on-line terminals, which simplifies both original program development and maintenance efforts, he said.

Programs are independent of the data base; if the data base changes, all programs have the changes available to them but need not be modified if their functions have not changed, he added.

The language processor with Citibos is said to produce object programs that are smaller than equivalent Assembler-coded programs.

Though these programs run slower than Assembler programs, the degradation is only about 15% rather than the "500%" slowdown often experienced with high-level languages, the vendor claimed.

The Citibos software is available under perpetual license when users purchase a turnkey hardware/software system from Cybek. It is also available for \$10,000 to end users who already have a mini supported by the software, the spokesman added.

Cybek is at 925 Clifton Ave., Clifton, N.J. 07013.

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The PLOT 10 Interactive Graphing Package includes a library of messages to guide the user along in a highly accessible conversational relationship with the computer.

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Checkout System Based on UPC

Ohio Market Ends Most Price Marking

By Ronald A. Frank
Of the CW Staff

TROY, Ohio — A supermarket here has been operating with a point-of-sale checkout system since 1974, but what makes this store unusual is that most of its items contain only the Universal Product Code (UPC) despite the nationwide consumer resistance to the elimination of price pricing.

The Marsh Supermarkets, Inc. store uses eight NCR 255-120 checkout terminals which include scanners that detect and register the data stored on the UPC labels.

As each UPC-marked item is scanned, the code number is transmitted to a drum file containing prices on 6,650 items. Each record in the file includes such data

as wholesale cost, department number, current inventory and sales per period.

About 80% of the grocery, dairy and frozen foods in the supermarket contain the UPC marking and no prices. In addition,



CW Photos by R. Frank

Store clerk runs item over UPC scanner next to checkout terminal while customer watches.

tion, 12% of the produce and meats packaged in the store are UPC-marked and also price-marked in a special labeling area.

On these latter items, the UPC label is used to record item velocity and sales information; the price is necessary since each produce and meat item has a different weight and a different price.

The scanning operation has been working in the store for about two years and may have been one of the first full-scanning systems to be installed. It was the pilot system for NCR, according to Brad Hall, manager of food and drug systems.

marketing.

When the Marsh system was first installed, the store undertook a six-month education campaign using bag stuffers and other methods to explain the system to shoppers.

Today, however, customers seem disinterested in the system and appear to take it for granted. A visitor to the store recently saw little evidence of customer concern about the lack of price marking.

Within the next few months, the 726-401 terminal processor will begin to operate on-line using binary synchronous transmissions to an IBM 370/125 with a 3704 front end located at the Marsh DP center about 80 miles away near Muncie, Ind.

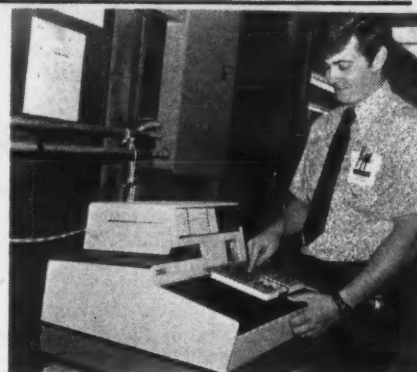
To Include 3650s

Eventually, the eight-terminal NCR checkout system will be connected to the 370 along with several IBM 3650 supermarket checkout systems which Marsh plans to install, Hall said.

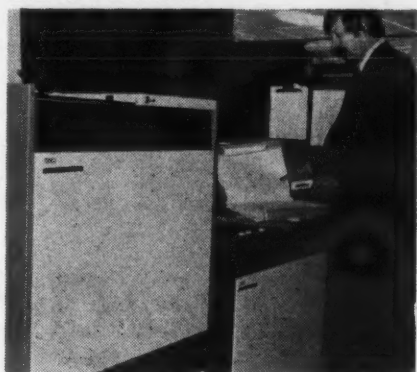
Marsh paid about \$114,430 for the terminal system, which it purchased. It currently pays \$660/mo for NCR maintenance.

There have been few equipment problems, but some of the UPC labels cannot be scanned by the checkout terminals. UPC markings don't register well on waxed and flexible surfaces such as milk cartons and plastic bags, Hall explained.

Since the store is dependent on the UPC item data base, an uninterruptible power supply system can operate three checkout lanes for 50 minutes in the event of a



Claude Finstermaker, assistant manager at Marsh Supermarket, changes UPC price information from manager's terminal. Overlay on keyboard allows manager to alter UPC data base.



Brad Hall of NCR checks listing of UPC data base next to 726 store processor with drum storage unit. Microcode for the 726 is loaded from cassettes.

power outage, he noted. In addition, a second 726 processor with a backup UPC data base can take over if the primary processor with its drum data base goes down.

Tymnet Asks to Be Value-Added Carrier

WASHINGTON, D.C. — Tymshare, Inc. has filed an application with the Federal Communications Commission (FCC) to operate its established Tymnet network as a value-added common carrier.

Tymnet is currently operating under the shared-use provisions of AT&T's private line tariffs and bills its customers under contractual agreements instead of under regulated tariffs.

Under the application filed with the FCC, Tymnet would operate as a regulated common carrier subsidiary of Tymshare and would bill customers according to tariffs approved by the commission.

Tymshare said it is requesting the change to regulated status because it plans to make network improvements, including a store-and-forward capability that would allow its customers to handle their internal administrative messages.

Tymnet will become a regulated competitor of Telenet Communications Corp. if its application is approved by the FCC. Telenet recently sent an informal complaint to the commission claiming the Tymnet network was actually providing value-added services that must be provided by a common carrier.

Tymshare answered the Telenet complaint by stating it was operating within the requirements of the AT&T shared-use tariffs.

The Tymnet network currently serves 34 users who operate 52 host CPUs on the network. Rates filed with the FCC are the same as Tymnet customers are now paying for the service, a Tymshare spokesman said.

Four Share Top User Ratings for CRT Performance

By John P. Hebert
Of the CW Staff

DELRAN, N.J. — Users of alphanumeric display terminals made by Datamedia Corp., Singer Business Machines, Teletype Corp. and Ann Arbor Terminals, Inc. rated their machines higher in overall performance than did users of other such terminals in a recent survey conducted by Datapro Research Corp. here.

Terminals manufactured by Applied Digital Data Systems, Inc. (Addis) and Four-Phase Systems, Inc. also received high ratings in overall performance.

IBM displays were the most widely used, according to the survey results, "All About Alphanumeric Display Terminals." The 54-page report includes responses from 575 users at more than 400 sites with a total of 14,103 installed display terminals from 73 vendors.

Accounting for those terminals, Datapro noted 258 users rated 7,691 IBM terminals. Fifty users had 442 Hazeltine CRTs, while Burroughs Corp. was represented

by 30 users with 569 displays.

In the survey, users rated terminals on a scoring system with 1 representing "poor" and 4 representing "excellent."

In the category of overall performance, the Ann Arbor Terminals Series 200 scored 4.0 along with the Datamedia 1500 series, Singer Model 82 and Teletype Model 40, the report said.

Following with scores of 3.8 each were Addis' 580 and 900 series and Four-Phase Systems' IV 70 series. Hewlett-Packard's 2640-A captured the next highest rating in overall performance with a 3.7, along with Datapoint Corp.'s 1100/2200 and 3000/3300, it said.

Burroughs' ID 700, 800 series, TD 802 and 9350 series, Courier Terminal Systems, Inc. Executerm models 60/260, 60/265, 270/2700 and other devices and International Telephone and Telegraph Corp.'s (ITT) 3200 and Asciscop 3501 alphanumeric CRTs gathered ratings of 3.6; IBM followed with a 3.5 rating for its

2260, 3275, 3277, 3270 and all others, according to the survey.

While the users' ratings of software and technical support were somewhat higher overall than last year's Datapro survey, both IBM and the independents still have much room for improvement in what the research company called "this increasingly important area."

The most notable terminal products, in terms of high scores in all or most categories, were the Ann Arbor Terminals Series 200; the Addis 580 and 900 series (whose lowest scores were 3.5 for ease of operation); the Datamedia 1500 series; the Hewlett-Packard 2640-A; and the Teletype Model 40, with two users scoring it high except in the category of hardware reliability, where it received a score of 3.0.

"All About Alphanumeric Display Terminals" is available for \$10, Datapro said from 1805 Underwood Blvd., Delran, N.J. 08075.

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Net Cuts Insurance Policy Processing Time to One Day

NEW YORK — A national insurance company based here is using a communications network to reduce the time to process applications for homeowner's insurance from a matter of weeks to one day.

Home Insurance Co. (HIC) uses a network of communications terminals located in its field offices and terminal controllers at HIC's central computer facility here.

The system previously used to generate homeowners' policies entailed mailing applications to the home office where data was keypunched into cards for computer entry.

The processed output was mailed back and, depending upon mail service and computer backlog, documents were returned within two to three weeks.

Now, after a local HIC office receives the application from any of its 7,000 independent insurance agents from 50 field offices, it is sent to a Memorex 1280 cassette terminal in New York, over standard dial-up phone lines at 1,200 bit/sec.

There are 20 different phone lines accessible by dialing one number, so there is little chance of waiting for an open line. The 20 phone lines connect to a Memorex 1270 terminal control unit which automatically translates the terminal's Ascii transmission code into Ebcidic used by the IBM 370/168 CPU and vice versa for communication in the other direction.

The information on the applications for insurance is collected on tape by the mainframe at the company's central computer facility. At the end of each day's business, the tapes are processed on the system by a special evening DP group.

Summary for Local Office

After dialing the computer the next morning, the local office receives a list of all processed items available from the work transmitted the day before.

This summary is basically an acknowledgment of receipt of the applications,

assuring none was misplaced. It also indicates the applications' status, such as policy processed or policy rejected because of missing information or improper coverage.

Minimum Requirements

The central computer also checks things such as minimum state requirements and whether the policy application meets them.

The computer evaluates applications based on which zone the home is in, building material, age and whether different options such as off-premises coverage are included.

Data on Command

Upon command from the operator of the remote terminal, the central computer sends the policy information. It is received and stored on tape by the cassette terminal.

After all policy information is received on cassette, the operator will disconnect from the computer and load the terminal's hard-copy printer with appropriate blank policy forms. Completed policies are printed at 120 char./sec.

The terminal's cassette storage also allows for unattended receipt of transmissions at any time, should this be desired.

Policy printing can be accomplished at the convenience of the remote offices; the cassettes are retained temporarily as a backup against information loss.

Units Evaluated

According to officials at the insurance company, an extensive evaluation was made of 20 competitive units before the selection of the communications equipment. The equipment required no modification of existing programs or software to accommodate it to the mainframe computer, the officials noted.

Courier Adds 278 Mini CRT

PHOENIX — The Courier Terminal Systems, Inc. 278 Mini-Display CRT terminal has been added to Courier's 270 family of display systems.

Designed for high-volume, short-message applications, the 278 is compatible with the IBM 3270 display terminal and can be intermixed with any of Courier's 270 display and printing devices, according to the company.

The terminal design features a nonglare/tilt screen, flicker-free display and a separate keyboard, it said.

It can be connected to Courier controllers including local and remote types and to the firm's virtual terminal line controller (VTLC), the company said.

Supports SNA

VTLC has been designed to support IBM's System Network Architecture (SNA)-like networking without complete central system upgrade, it noted.

The 278 can be purchased for \$2,495 or leased for \$70/mo on a three-year, full-service contract, Courier said from 2202 E. University Drive, Phoenix, Ariz. 85034.

Tape Winder Collects Dispensed Paper Tape

NORTHBROOK, Ill. — Data Specialties, Inc. has added the Model TM-230 utility tape winder to collect paper tape that is dispensed by readers, perforators, teletypewriters or other similar equipment.

The device uses a tape tensioning arm which turns the take-up motor on only when tape is moving, thereby reportedly eliminating the need for a continuously running motor.

The winder is supplied with an 8-1/2-in.-diameter separable reel and is priced at \$92. Data Specialties is at 3455 Commercial, Northbrook, Ill. 60062.

Correction

The AT&T Multi-Schedule Private Line (MPL) rates [CW, April 26] for a 15-mile circuit have only a flat monthly fee without an additional mileage charge.

The flat fee without any other charge applies only at distances of 1-, 15-, 25-, 40-, 60-, 80-, 100- and 1,000 miles. For circuits with other distances, the cost is based on a flat fee plus a monthly mileage charge.

Users should consult the complete MPL interexchange rate plan when estimating the cost of a specific circuit.

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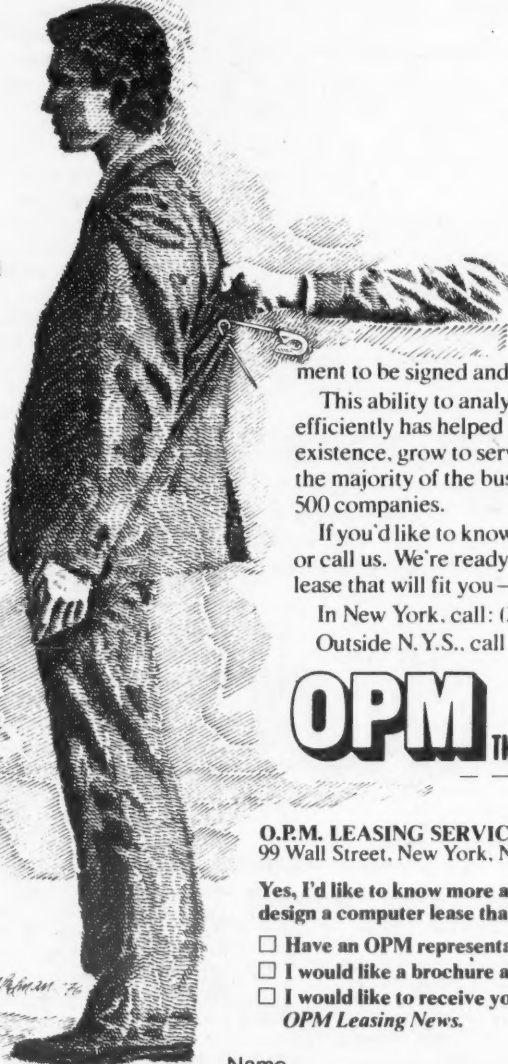
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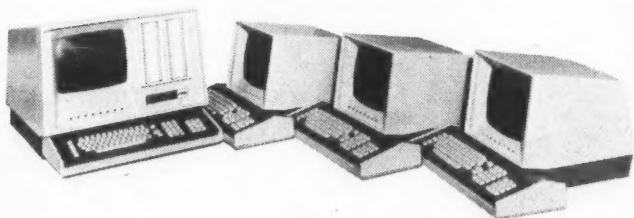
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Requirements Come First

Tariffs Called Only Part of Net Picture

By Esther Surden
Of the CW Staff

LOS ANGELES — Tariffs really don't mean very much unless the user first looks at the entire system and determines its requirements, according to Harvey Weiss, president of Weiss and Associates in Denver, Colo.

Speaking at a Computer Caravan workshop on data communications transmission alternatives here recently, Weiss gave a short tutorial on networking and some advice to users on how to go about making networking decisions.

The user should document the

individual network's systems requirements and write down the knowledge needed to develop the net, he said.

"Clear away the symptoms," Weiss suggested, and concentrate

development in terms of system objectives," he advised.

"Until you know what the approach is, you can't say what the best" or most cost-effective alternative may be, he told the

Terminal Transactions

on the problems to help define the network.

"Everybody tells me, 'I want data communications but I only want the latest technique,' but you should look at systems de-

velopment.

"Many data communications people say, 'I want 100% uptime,' so they build full redundancy — which may not be necessary from a system standpoint," Weiss said.

Tariffs tell the user nothing, Weiss added, not only because they are difficult to interpret. If, for example, the user must transmit 129 characters of data on a packet-switching system, the cost-effectiveness of that method may disappear.

Most packets transmit 128 characters per packet, he explained.

The most important thing is cost justification, Weiss emphasized.

Two Types of Processing

Because users should know the point from which they are starting, Weiss outlined the various aspects of a communications network.

Two types of processing go on within the communications framework, Weiss said. Data processing differs from data communications because, in data processing, the system only compiles a record.

In data communications, however, the system keeps track of the kind of terminal being handled.

A communications front end was developed to take care of communications processing needs, Weiss noted.

"There isn't one information-processing machine on the market today, in my opinion, that can do both kinds of processing," Weiss told the group.

Networks can be described in terms of what hardware, including lines or terminals, is needed; in terms of geography — whether the system will be interstate or intracity; and in terms of function as a system, Weiss said.

The four kinds of line carriers users can consider are the specialized common carriers, utilities, satellites and the value-added carriers.

Systems, Inc. 2,400 bit/sec modem to handle the terminal telecommunications processing locally in each bank branch, the company said.

Up to 32 terminals can be connected to both micro controllers; this approach allows the terminal operator to switch controllers at any time in case of controller or phone line problems without losing any transaction information, FAI said.

Among the typical applications the Foundation System can handle are on-line update of demand deposit account and savings master records; on-line inquiry for installment loan and savings club files; new account opening and file maintenance through the CRTs; on-line transaction posting and file handling; and electronic funds transfer network connection to a main computer, according to the company.

The cost of the FAI banking system varies with the size and complexity of the individual user's project. However, the price for the minicomputer equipment, dedicated phone lines operating at 2,400 bit/sec and the software installation and training can range from about \$130,000 to over \$400,000, the spokesman said.

Monthly maintenance on the minicomputer hardware and terminals costs \$1,200 to \$3,500 depending upon the level of maintenance coverage desired, he added.

FAI is located at 140 Weldon Parkway, Maryland Heights, Mo. 63043.

MARYLAND HEIGHTS, Mo. — An on-line banking system with a minicomputer, dual microcomputer controllers and microcomputer-based teller and administrative CRT terminals has been introduced by Financial Automation, Inc. (FAI).

The banking system utilizes the Data General (DG) Eclipse C300 minicomputer with 256K bytes of memory in each processor. The minicomputer software, called the Foundation System, supports not only the firm's own Series 92 Financial Terminal System, but can be configured to handle any type of asynchronous and bisynchronous terminal or IBM terminal with Synchronous Data Link Control (SDLC), FAI said.

The Foundation System — a real-time monitor of banking functions — runs under DG's standard MRDOS operating system and utilizes DG's Communications Access Manager as the basis for its telecommunications, an FAI spokesman said.

Teller and administrative CRT terminals in the Series 92 incorporate Motorola M6800 microcomputers with 4K of programmable read-only memory (Prom) and 8K of random-access memory (RAM), he added.

The teller terminals incorporate a 9-in. CRT screen in a 40-by 12-character format and utilize a 40-column alphanumeric journal and receipt printer which can print multiline receipts at 110 char./sec, the company said.

The teller displays also utilize a customer personal identification number (PIN) pad and a plastic card reader at each teller window.

Series 92 administrative displays include a 15-in. CRT screen capable of displaying 1,920 characters and a choice of two printers: a Texas Instruments Corp. 30 char./sec thermal dot matrix printer or a Centronics Data Computer Corp. 120- or 165 char./sec Series 306 dot matrix printer, the spokesman said.

Telecommunications hardware in the terminal system provides total redundancy, according to the firm, through two M6800 local microcomputer controllers with up to 64K of RAM, Prom and read-only memory (ROM).

Each microcomputer controller has a built-in Universal Data

ABA Task Force Compiling List Of Telecommunications 'Pros'

WASHINGTON, D.C. — The Telecommunications Task Force of the American Bankers Association (ABA) is assembling a mailing list of voice and data communications professionals in banks.

The purpose of the list is to obtain the in-depth information required to assist bankers in examining their telecommunications needs, as well as to gather responses to proposed communications regulations, the ABA said.

"Each individual placed on the list will be expected to participate in identifying the needs, objectives and priorities regarding telecommunications for banking," according to Charles Donaldson, chairman of the ABA Telecommunications Task Force.

Those wishing to be placed on the list can write to Arnold L. Kaplan, assistant director of the Operations and Automation Division, ABA, 1120 Connecticut Ave. N.W., Washington, D.C. 20036.

Tape Unit Series Features 9-Track, GCR Recording

By a CW Staff Writer

BLUE BELL, Pa. — Univac has announced a series of 9-track magnetic tape units featuring high-density coded recording and error correction "on the fly."

The series includes the Univervo 30, also available in a 7-track version; the 32; 34; and 36.

With the exception of the Univervo 36, which will be available for Univac 1100 system users only, the tape units are for users of the 1100, 90/60 and 90/70 systems, the company said.

The Group Coded Recording (GCR) technique, which records at a density of 6,250 bit/in., is 3.9 times more dense than phase-encoded (PE) recording and 7.8 times more dense than non return-to-zero (NRTZ) recording, Univac said. However, both of the later recording modes will be available in the series, the firm said.

The GCR mode is said to enable the user to correct an infinite burst of 2-track errors "on the fly." It also enables a high percentage of more-than-2-track errors to be corrected, the firm said.

The high transfer rates the series offers will reduce the amount of I/O time users take to perform tape-oriented serial file processing, Univac said.

Dual-density recording is standard with the Univervo 30 series 9-track version only, allowing reading and writing in GCR and PE modes, Univac added.

The units, which are designed to load automatically, use industry-standard wraparound cartridges, and are equipped for automatic tape threading. They also have power windows.

A radial tape interface allows each unit to be attached directly into the control unit for data transfer, AC (power) and DC (signal control) primary power.

The basic Univervo 30 subsystem consists of a 5042 control unit and from one to eight tape units in any combination.

By adding a second control unit, the user may connect 16 tape units and obtain dual access, the company said. Special features are available with the control unit that allow recording with either 9-track or 7-track NRZI techniques.

The Univervo 30 (Type 0872-00/01) is a 9-track PE and NRZI tape unit with a transfer rate of 320 kbit/sec at 1,600 bit/in., and 160 kbit/sec at 800 bit/in.

Tape speed is 200 in./sec. The 30 rents for \$906/mo including maintenance, and purchase price is \$34,800.

The Univervo 30 (Type 0872-02/03) is a 7-track NRZI tape unit with a transfer rate of 160 kbit/sec at 800 bit/in.; 111.2 kbit/sec at 556 bit/in. and 40 kbit/sec at 200 bit/in. Rental and purchase prices are the same in both 7- and 9-track

models.

The Univervo 32 (Type 0873-00/01) is a 9-track tape unit designed for GCR and PE recording. The transfer rate is 470 kbit/sec at 6,250 bit/in. and 120 kbit/sec at 1,600 bit/in. The tape speed is 75 in./sec, the company said. The unit rents for \$822/mo including maintenance, and purchase price is \$31,584.

The Univervo 34 (Type 0873-02/03) is a 9-track tape unit designed for GCR and PE recording. The transfer rate is 780 kbit/sec at 6,250 bit/in. and 200 kbit/sec at 1,600 bit/in. Tape speed is 125 in./sec. The 34 rents for \$940/mo including maintenance, and purchase price is \$36,192.

The Univervo 36 (Type 0874-00/01), available for 1100 series users only, is a 9-track tape unit designed for GCR and PE data recording. Transfer rate is 1,250 kbit/sec at 6,250 bit/in. and 320 kbit/sec at 1,600 bit/in., with tape speed of 200 in./sec. The 36 rents for \$1,012/mo including maintenance and sells for \$38,880.

A basic Univervo control units for 90/60 and 90/70 computer systems rents to \$1,442/mo including maintenance and has a purchase price of \$55,392.

An unbuffered Univervo 30 control unit for 1100 series computer systems rents for \$1,727/mo including maintenance and has a purchase price of \$66,336.

A buffered Univervo 30 control unit for 1100 series computer systems rents for \$1,884/mo including maintenance and has a purchase price of \$72,336.

AKS Offering Data Entry Audit

NEW YORK — "Data Entry Department Audit," a service said to assure companies optimum operating efficiency in their data entry department, is now being offered by Advanced Keyboarding Systems (AKS).

The product covers the evaluation of and recommendations for the following major areas:

- Operator performance. The skill level of each data entry operator is measured against performance standards.

- Work flow. A diagram of current work flow is produced, and recommended redesign of the work flow process is developed.

- Physical environment. Within the framework of existing restrictions, suggestions for environmental improvement are detailed.

- Organizational structure. In large data centers, AKS studies present organizational structures with the primary emphasis on communications.

Memorex Spawns 3340-Type Drives

SANTA CLARA, Calif. — Memorex has entered the arena for 3340-type disk drives with the introduction of its 3640 unit that is said to be typically priced at 15% to 20% less than the comparable IBM drives.

Using Winchester-type technology with read/write heads, spindle and circuitry as part of the data module, the 3640 can be attached to IBM 370/155s and up.

The unit can be intermixed with 3340s from IBM, Memorex said, or can replace those units.

While compatible with the IBM unit, Memorex said the 3640 has "an advanced design voice coil servo system"

that offers a 20% faster average seek time (20 msec for the 3640 vs. the 25 msec for the 3340).

The 3640 may be made up of a 3643 disk drive module and controller and up to three additional 3640 modules for a maximum subsystem capacity of 559.1M bytes, Memorex said.

Scheduled for delivery in July, the Memorex 3640 with eight-spindle capacity costs \$4,735/mo on a 24-month lease with rotational position sensing while the comparable IBM units costs \$5,590/mo on a 24-month plan, Memorex said from San Tomas at Central Expressway, Santa Clara, Calif. 95052.

Early Participation of Attorney Buffers Gear Choice Headaches

By Esther Surden

Of the CW Staff

LOS ANGELES — "Bring in your attorney right in the beginning," because he can save headaches in selecting among equipment alternatives, Robert Schlick of GTE Data Services said at a Computer Caravan session here recently. The attorney should work nights with the DP department, he added.

Schlick told the group there are many viable alternatives available to the large system user. All of them require the advice of a good attorney, he said, to eliminate untenable contract clauses or add performance criteria.

Users have the choice of renting main-

frames on a month-to-month basis, renting for an extended period of time (2 to 4 years), going to third-party leasing, purchasing or going to a service bureau for part of the workload, Schlick said.

Month-to-month rental gives the user a great deal of flexibility and more dealing power, and 50% or more of the rental can be applied to the purchase price, Schlick said. However, there is a high cost factor with additional usage charges, which for IBM can be extensive, Schlick said.

An extended term rental can save about 16% over month-to-month leases; tax investment credits can apply; and there are no additional usage charges. There are also fixed costs for budgeting, he added. However, the person who leases a system this way loses a lot of the flexibility associated with leasing, he said.

Third-Party Leasing

Third-party leases usually provide a 25% cost advantage, but usually the people who lease the system want to take the tax investment credits, Schlick said. With the third-party lease, the user is locked into a payoff penalty should he want to get rid of the system, he added.


The method GTE Data Services uses is a combination of an extended term agreement to check out a piece of equipment and then purchase of the gear.

Purchasing represents the ultimate in cost savings; write-offs can be taken as you want, Schlick told the group.

Selection of a mainframe "should be considered with the exact kind of workshop your shop uses," he warned. "We've made it a rule to go to some organization that has the machine and run those types of jobs under a loaded configuration," because the benchmarks supplied by the vendors are sometimes inaccurate, Schlick said.

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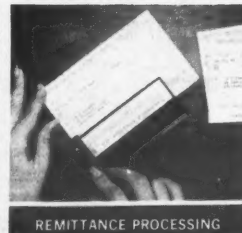
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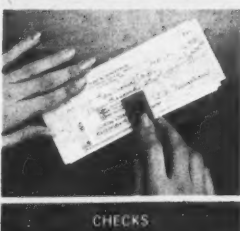
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More Sophisticated About Financing

Big Systems Users Cited in Rise of Long-Term Leasing

By Esther Surden
Of the CW Staff

SAN FRANCISCO — The major change in equipment financing in recent years is "the increasing acceptance of long-term leases in the peripheral and mainframe area," according to Robert Teichman, regional manager for Crocker Bank Leaseplan.

The change is a result of two factors, Teichman told a Computer Caravan workshop on financing alternatives here recently.

First, the manufacturers just don't have the money to support month-to-month rental, he said, but the more important factor is the increasing level of sophistication on the part of the user.

Whatever financial alternative is chosen, Teichman said, the decision should be based on "what the system is going to be worth over [its] useful life."

"If you can determine the useful life of the system would be over three years, then you should look at a long-term lease plan," he advised the workshop attendees.

Three Alternatives

Teichman defined the financing alternatives available to users as rental plans, lease plans and financing plans. Rental plans are generally month to month and the user can return the equipment at virtually any time.

Lease plans can be gotten for almost

any length of time, and financing plans go through a bank, he explained.

The great advantage of rental plans is that they can be canceled on short notice. This is very useful for peripherals "because of the great deal of obsolescence in this industry," he said.

Rental also includes the maintenance cost for the equipment, he noted.

Lease plans can have great flexibility, Teichman said. "You might have a system on which you can get a 30-month lease that you can trade in after the 30 months, upgrade or even choose to buy" after the user has paid in 50% of the rental, he added.

"In very large systems, there is a great use of leverage leases" which assume a full market value at the end of the lease term. The investor or lessor looks at the

residual value of the equipment, Teichman said.

A leverage lease involves a lessee, an equity participant who is "somebody who buys 20%" of the equipment and a source of financing such as a bank.

"Documentation is quite a job for this kind of lease," so usually only very large system users take advantage of them, he said.

Lease plans are also coming from the computer lessor who buys a system for his inventory and then leases it to an account. More and more lessors are offering long-term, full-payout leases.

The finance lessor allows the user to define exactly what it is he wants in the equipment and offers full payout. At the end of the lease, the user has "100% financing," Teichman continued.

"The decision on how to finance a computer is more and more falling into the treasurer's office," he added.

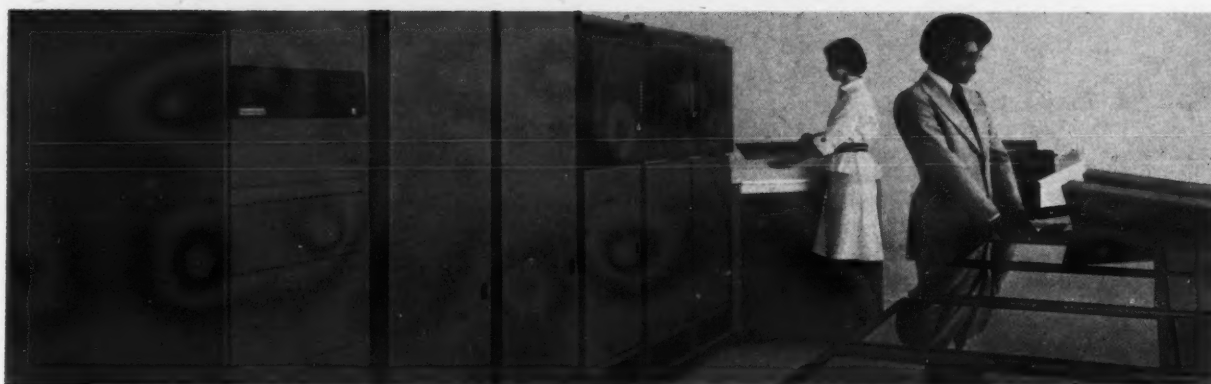
Some important hints about financing alternatives were added by George D. MacKay, equipment leasing officer for Crocker Bank Leaseplan.

Users should be aware that they are apt to get used systems if they rent equipment, MacKay said.

Also, if the user chooses to rent because of a cash flow problem, he should know about the cash outlay for software and the additional charges for a third shift.

For customers who aren't certain of whether they want to make a long-term investment in a long-term lease, the best plan may be to rent for a year then change to a lease program after that, MacKay suggested.

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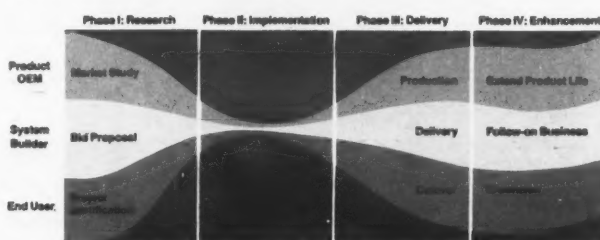
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Net Helps Six Counties Trim Welfare Costs

CINCINNATI — Six Cincinnati area counties have joined forces with a computer to hold down welfare costs.

And even though caseloads are increasing at an annual rate of 30%, their system helped trim \$355,000 last year from food stamp and other welfare assistance programs, according to Seth P. Staples, Hamilton County welfare director.

The IBM 370/135 keeps status files on 200,000 welfare recipients in the six-county network, which is comprised of Hamilton (Cincinnati), Brown, Butler, Clermont, Clinton and Warren counties. The computer is installed at the Hamilton County Welfare Department, which manages the network.

During 1975, the network's first full year of operation, computerization saved \$262,000 in Hamilton County, \$60,000 in Butler, \$18,000 in Clermont, \$9,000 in Warren and \$6,000 in Clinton. (Brown County joined the network in March 1976.)

Besides cutting administrative costs, the computer has helped the counties stop fraudulent applications for aid from two or more counties at the same time, Staples said.

Each county uses its display terminal to cross-check each other's records to be sure every recipient is receiving payments only from the county in which he is eligible.

Agency officials from all six counties agree that overpayments have been virtually eliminated; because the computer checks all eligibility charges and calculates the amount of each individual financial grant, benefits are always current.

Staples said the computer has allowed the size of his administrative staff to remain relatively stable during the last five years, despite a 30% increase in the number of Hamilton County welfare recipients.

"Figuring budgets and filling out forms used to take up as much as 40% of our caseworkers' time," Staples said. "Now, they can spend more time on the job they were trained for — casework in the field."

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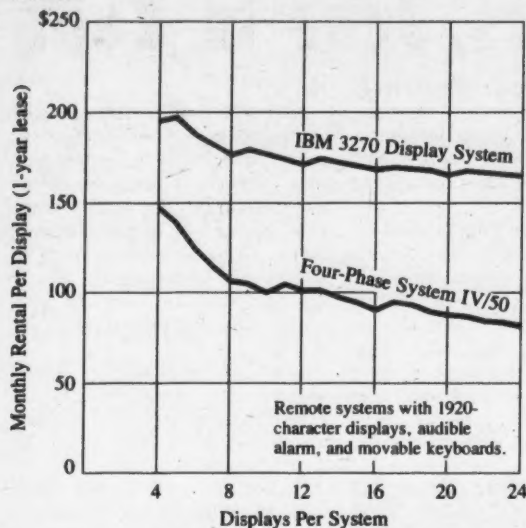
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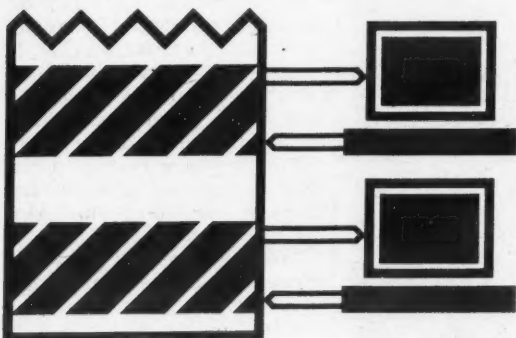
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2780/3780 Simulator. NTP/130 is a programmable remote batch system that features disc spooling.

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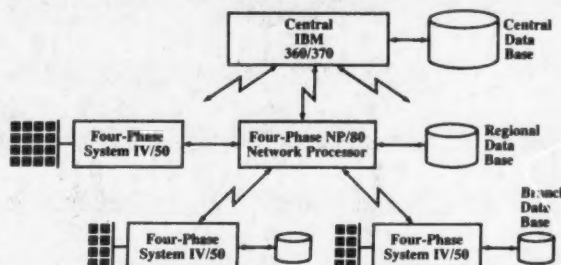
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N.Y. System Matches 213,000 Workers, Jobs in Year

NEW YORK — The New York State Department of Labor used a computer system to place 213,000 persons in jobs in private industry in this city in the most recent fiscal year.

Use of a computer system is the most economical and effective method known to match workers with jobs in New York's fast-changing market, according to Dr. Philip Ross, state industrial commissioner and head of the department.

The department's citywide Job Bank Screening System includes

computer terminals in the 32 field offices, allowing instant matching of available jobs with an applicant's qualifications.

On one recent typical day, 6,000 jobs ranging from "materials handler" to "nuclear physicist" with salaries up to \$40,000 were listed in the job files. About 500 applicants were placed that day.

Last December the department placed 15,700 applicants. In October, traditionally the busiest month for job placements, 20,200 openings were filled.

Employers inform the service of available positions and the necessary qualifications.

Jobs are entered into an IBM 370/165 mainframe in Albany. The 370 has 3M bytes of main memory and an additional 2M bytes of IBM peripheral memory and 1M byte of memory from Cambridge Memories, Inc.

Access to Wider Area

"An important advantage of this computerized system over the old manual method is its flexibility, speed and access to

jobs in a wider geographical area—the whole of Metropolitan New York," according to Virginia Browner, metropolitan area director of manpower services.

"Previously, an interviewer in a field office had only his own job file with which to assist an applicant. If he wanted to extend his area of search, he would have to write to other field offices or call other interviewers, hoping they would have something. That, of course, took too long and usually wasn't even feasi-

ble."

Of the 32 field offices, 19 specialize by occupation or profession: commercial, apparel, industrial, service, household, hotel and restaurant. An applicant at the appropriate office fills in a form, listing his requirements in order of importance; salary, position and location are generally the most important of 26 criteria.

After an applicant is interviewed, the application is entered through an IBM 3767 terminal and transmitted to the Albany computer. The computer searches through the job bank and immediately sends back to the inquiring office a list of several job possibilities for the applicant to follow up.

Two Search Types

"The interviewer can request either a "soft" search or a search based on occupational codes listed in the 18,000-entry Dictionary of Occupational Titles [DOT], Ronia Solar, coordinator of manpower data systems, said.

"The soft search is by general work field—for example, 'merchandising' or 'research'—as well as an applicant's aptitude, interests, temperament and/or vocational training.

"The occupational code search is more specific. A code number from the DOT is used to look for specific jobs; the number of coded digits entered into the terminal determines how extensive a search the computer makes—the more digits, the more specific the search; the fewer digits entered, the broader the search," Solar said.

The applicant's qualifications are graded by a scoring system. The computer finds the first five openings closest to matching that score—or the next five on a subsequent search.

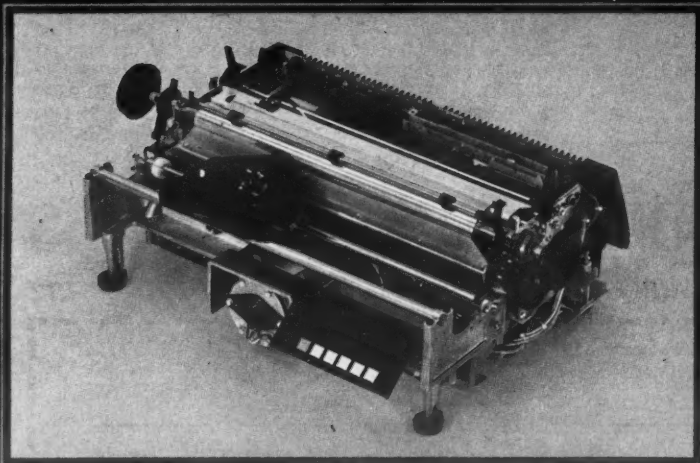
The system can search beyond the top requirements if nothing in the computer file matches. It is up to the interviewer and applicant to determine whether any of the openings are suitable.

The efficiencies generated by the system have benefitted employers, applicants and state employees, according to Alex Altheim, placement director.

"The system has improved chances for an applicant's placement by giving him instant access to openings in a very wide area; the employer now has a potentially larger field of applicants from which to make a choice; and our own department is making much better use of tax money and its own resources, since interviewers can help far more applicants in a day, but must still use their own judgment in working with the computer," Altheim said.

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Uses Sybol Language

CAI Syfa System Designed for Distributed Processing

By Esther Surden
Of the CW Staff

IRVINE, Calif. — The Syfa interactive business system introduced by Computer Automation, Inc. (CAI) here last week is specifically designed for commercial distributed processing applications, a spokesman said.

The system is well-suited for OEMs and Fortune 1000-type companies with multiple divisions, each with individual data processing requirements and the need to communicate to a central host, he added. The Syfa system can accommodate both interactive and batch requirements, CAI said.

Syfa features Sybol, a business-oriented high-level programming language introduced with the system, CAI said.

Also introduced for the system was CAI's own Syfa information station CRT with a standard typewriter keyboard and a calculator-like keypad, the firm said.

A basic Syfa system, including a 8-port CPU with 64K bytes of core memory, one 10M-byte disk drive and software, costs \$54,000 and is available within 60 days, the firm said.

The Syfa CPU is a revised version of the firm's LSI-2, CAI said, with expanded firmware and an enhanced instruction set. Memory can be accessed in 16-bit words, in bytes or in bits. The instruction set includes decimal arithmetic and character string handling, and I/O and status stacking instructions are handled by a vectored priority interrupt scheme, the firm said.

The system can thus handle multiprogramming at the hardware level, the firm said.

The system uses non-volatile core main memory with a 1,200-nsec cycle time. Core is expandable from 64K bytes to 1M bytes, it noted.

Two types of disk drives are available for the Syfa system; however, the disks cannot be mixed on a single system. One model has a fixed and removable disk, each with 10M bytes of storage. The larger drive has an 800-byte removable pack. Up to eight drives can be attached to the system, CAI said.

The drives are handled by a microprogrammed disk controller with direct memory access. Head-positioning requests for all the attached drives are simultaneously processed, the firm said.

The basic Syfa system includes an asynchronous multiplexer with eight ports; the system can be expanded to 24 ports.

Terminals can be either hard-wired to the multiplexer or use a modem for communications, the firm said. Each port accepts any EIA or CCITT device, CAI noted.

The information station introduced with the system has a CRT and a detachable keyboard. The screen displays 24

lines of upper- and lower-case Ascii, the company said.

The information station can function as a data capture station or as an interactive terminal and can communicate with another Syfa terminal or with the central mainframe with the Syfa processor acting as an interface, a spokesman noted.

The system can handle up to two printers attached directly to the CPU or any number of printers attached to the available multiplexer ports. Printers with from 100- to 600 line/min speeds are offered with the system, CAI said.

Syclops

Syfa runs under CAI's concurrent logic operating system (Syclops), which is said to support the simultaneous execution of 24 application programs, a background

utility, one emulator for communications with another system and two print spoolers. Syclops incorporates virtual storage techniques, CAI said.

Utility programs for the system include a program text editor, a compiler, a sort, a file manager and a file-to-printer dump, CAI said.

End-user application programs are written in Sybol, a language said to resemble Cobol in its structure and appearance. A Sybol program is said to have immediate access to the real-time coordination of the multiple ports; activation of concurrent background utilities; communications with another system; control of terminal I/O; spooled or direct printing; and disk file creation, retrieval, alteration and expansion, the company said from 18651 Von Karmon, Irvine, Calif. 92664.



Computer Automation, Inc. Syfa System

Implementation Takes Time, Users Told

By Esther Surden
Of the CW Staff

LOS ANGELES — "If you want to be realistic, look for five to six months to pass from the time you buy to the time you have a viable system," George Tamas, president of Tamas and Associates told a workshop on in-house computers at a Computer Caravan session here recently.

Tamas examined the pros and cons of buying a minicomputer as opposed to alternatives such as time-sharing and service bureau computing.

Generally, one should use a service bureau for a business that has low-volume standard accounting applications, Tamas said. A service bureau doesn't require the user to add staff as an in-house system might and doesn't involve expensive new forms or applications design on the user's part, he said.

The investment with a service bureau is usually small and based on a dollar-per-unit cost. "If you grow, it will cost more," he warned. But one of the good things about a service bureau is "you don't have to keep it forever," Tamas said.

A disadvantage of the service bureau is that the user "will have to take what is available" even if it's not quite the way the user is doing business, Tamas said. Also, "as your volume starts to grow, you really get hurt."

The most critical disadvantage of a service bureau is slow turnaround time. "If you have time-critical applications, it can be very bad," Tamas said. Turnaround time with a service bureau ranges from two to seven days, he said.

With time-sharing the user has terminals in the offices, taking away the turn-

around disadvantage, Tamas said.

With time-sharing the user "doesn't have to endure the cost of applications development" or increase staff, he added.

The major disadvantage of time-sharing is "what happens if the computer goes down?" If the user doesn't select a time-share firm carefully, he could be hurt very badly. The firms should have backup available in case the system goes down," Tamas said.

If the user decides to get a minicom-

puter, there are alternatives open to him. The system can be purchased outright as a capital investment, or a five- to seven-year lease can be arranged. With the lease plan, after a fixed amount of time the user will own the machine, Tamas said.

Buyers should beware of hidden costs in purchasing a mini. First, the user will have to find space for the system and modify the room environment to suit it, he said.

(Continued on Page 32)

Company Profile Seen Necessary Before Going to In-House Mini

By a CW Staff Writer

LOS ANGELES — Before going to an in-house minicomputer, users should "be prepared," George Tamas, president of Tamas and Associates, told a Computer Caravan session here.

"Develop a background profile" on your company to know where you are starting from, Tamas advised. The profile should include how old the company is, whether it is privately held or publicly owned, a gross sales history that includes a profile of recent growth, the kinds of products the company deals with and the number of divisions in the firm, he said.

An organizational flowchart should be included because, "it is very important to know who are the key individuals involved in various processes and procedures in the company."

Next, a company should list applications it is currently processing, either by hand or by service bureau. Whatever busi-

ness you are in, you have a number of processes that are being taken care of, Tamas said. This becomes the system outline.

The individuals in charge of the various processes should create a picture of the application, including who is served and what source documents are currently used to set up a file, he said.

A list of end-product documents and reports that are now produced should also be compiled.

A procedural outline or flowchart indicating how things operate now should also be included.

Finally a summary of what you would like to see the system do and what jobs the user would like the mini to perform should be added, he said.

"You now know where you started from," Tamas told the group, which is a step toward knowing what you are getting.

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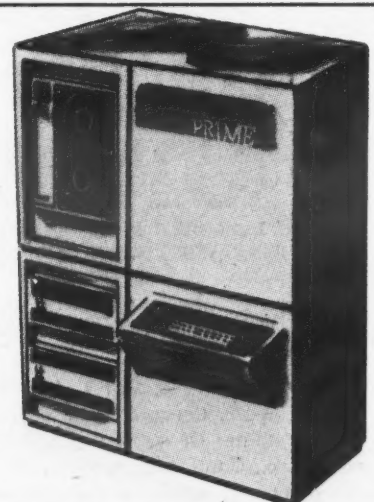
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Mini Helps Library Users Borrow Books

DALLAS — A mini-based circulation control system at the University of Texas library here allows patrons to check out books themselves while providing a theft control system that eliminates the need for security personnel, the user said.

With the system, the library patron goes to a user checkout station where he processes the book, establishing a readily available record for the library staff's use.

The circulation control system, built around a Hewlett-Packard 21MX minicomputer, was installed in the library last summer by Innovative Systems, Inc. of Dallas.

"We had some apprehension

that people wouldn't readily accept the system," James T. Dodson, director of libraries, recalled.

"We thought they might resist the idea of checking out the books themselves with a machine, but that hasn't been the case at all."

The library has approximately 300,000 volumes and is expanding at the rate of 50,000 to 60,000 items per year.

Mini Checks Files

After a patron finds the item he wants to check out, he goes to one of two checkout stations and inserts a coded identification card into a card reader.

The information on the card is relayed to the mini, which checks the card number against its files to determine whether the patron is in good standing.

If the patron is approved, the system relays a message to him on a CRT at the checkout station and instructs him to insert the item in the book tray.

A bar code, containing the item's circulation number, is located on each book. A bar code scanner relays the number to the mini, which checks the number against the hold file.

If the patron's identification number matches that of the first requester or if the book is not on hold, the computer records the item as being checked out to the patron.

When the system determines the patron at the checkout station is entitled to the book, it relays a signal to the activator/deactivator at the station, which desensitizes a detection strip in the book, allowing it to be carried past the detection system.

Noncirculating materials contain a permanently activated detection strip.

A thermal printer then issues a due date slip to the patron, completing the transaction. Each station can handle up to 1,000 transactions a day.

If the patron should "forget" to check out the book properly, the detection strip inserted in the spine of the book will re-

main activated, generating a radio frequency signal which is picked up by a sensing device located at one of the library's two exits, and the electronic gate at the exit will automatically lock.

Work Hours Reduced

The biggest factor in the university's decision to install the \$180,000 system was the reduction in staff requirements. The library is saving 200 man-hours a week in security staff alone, Dodson estimated.

The library chose a minicomputer-controlled system after the administration studied other systems and found no standard system could meet its specifications.

The administration asked for bids, and Innovative Systems was the only firm to reply, Martin said.

The system also provides increased control over circulating materials, Dodson said.

The normal circulation period is three weeks, but it is reduced to seven days if someone places a hold on an item. A patron places a hold on a book by entering his identification card at a checkout station and then typing in the appropriate code for a hold transaction and the book's circulation number at the keyboard.

At the end of each day, the hold notices are transmitted to an IBM 370 serving three University of Texas campuses, where they are processed and mailed to each patron to whom a book on hold is checked out, informing the patron of the new due date.

Now when patrons who have the maximum number of books on loan, overdue books or library fines enter their identification cards at the checkout station, the computer relays a message back to the CRT screen informing them they must consult the library staff.

The staff can override the computer's rejection of a patron's transaction if circumstances warrant it, Dodson said.

Implementation Takes Time: Tamas

(Continued from Page 29)

Then the user should look at how much the software will cost and ask the question: "What are my realistic staffing requirements?"

He also told the group to be wary of vendor-supplied software packages.

The buyer should define what the reports to be produced should look like, exactly. It

sometimes takes up to 90 days to come to the point where there are no discrepancies between the buyer and the vendor, Tamas said.

Define what your absolute minimum requirement is for custom software. "What you must have for this thing to pay its way from day one," Tamas told the group. "Because once you've done that, you have a luxury; the thing works," he said.

The reach for speech, and other important topics in Source Data Entry.

A special report in the June 28th Computerworld.

Computers can process only the data they have access to. And the speed of your entire computer operation is necessarily dependant upon how fast you convert raw data to machine-readable form. That's why the data entry function has been the target of so many economizing measures over the years. And we've come a long way from the card and keypunch sweat shop environments of ten years ago. Key entry is no longer widely viewed as a purely clerical function for control clerks to balance or correct at a later time. Now there's a variety of systems that enable an operator to enter data, edit and validate it automatically, transmit it to the host computer and then receive the interpreted data, all with the same equipment. And we'll look at how organizations are using systems like these to increase the economy and utility of their computer operations.

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In all, you'll find in-depth summary of what's being done in the eminently practical field of source data entry. And if you have an interest in data entry methods you should be reading this special supplement in the June 28th Computerworld. If you're a marketer in this field, here's where you should be telling your story. Ad closing date is June 11. Contact your Computerworld salesman for complete details. Or call Judy Milford at (617) 965-5800.



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User Picks Mini After Finding Canned Applications Too Limiting

By Esther Surden
Of the CW Staff

PHOENIX — Because an arts and crafts supplier here found canned applications programs too confining, the user picked a small business system to do its accounting jobs.

"We chose the Adam computer because our applications didn't conform to the accounts receivable packages available," according to James L. Rhodes, vice-president of finance for Crown Crafts and Notions.

"We wanted to do somewhat unique things and adaptation of existing packages for that purpose would have been very expensive," he added.

Crown looked at the Data General Corp. Nova, NCR Century series, Olivetti mini's, the IBM 32 and Basic Four configurations before settling on the Adam mini from Logical Machines Corp.

Adam is the "no software, no programmer" small business system the user himself programs with a base vocabulary already programmed into the system, Logical said.

Crown is a wholesale distributor of craft supplies, including découpage kits, wooden beads and sewing notions; it handles about 2,000 customers nationwide.

"Every town in the world has a craft shop, it seems," Rhodes said. His company had been spending a lot of time manually keeping track of the fluctuation in customers; a lot of shops go out of business soon after they open because the owners are artists, not business people, he said.

Many of Crown's customers prepay their invoices, Rhodes said, and it was very difficult to find an application pack-

age for accounts receivable that would let the firm continue operating in this way.

"We didn't want to change the way we were doing business," he said.

In addition to customers who prepay invoices, Crown has cash-on-delivery accounts and some customers who pay on account, he added.

Crown acquired the small business system in January 1975 and loaded its accounts receivable package by the first week in February, Rhodes said. He and another staff member went to Logical's training school in San Francisco for three days to learn how to use the machine.

Crown ran a parallel system on its old NCR posting machine for 60 days. At the end of that time, all necessary changes were made and the firm was pleased with the mini's output and accuracy, he said.

The Adam system includes 32K bytes of memory, a slow-speed printer, 10.6M bytes of disk and a CRT; it cost the firm \$39,000, Rhodes said.

The system has allowed Crown to continue to grow, Rhodes said. The firm is considering getting a high-speed printer to replace the one that came with the system to try to cut down on printing time.

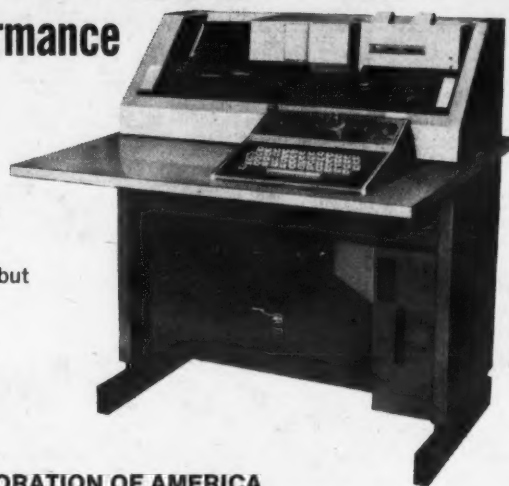
A 300 line/min printer could print the customer list in 20 minutes; it takes nearly two hours to do so now.

"I will have to learn to schedule my applications better than I have been" as more applications are added to the system, Rhodes admitted, but "I don't visualize any change in systems for a while," he said.

"The system has reduced our response time, things are posted on time, we are more efficient and our capacity has greatly increased," he concluded.

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John W. Brackett, PhD is a founder of SofTech and is a company Vice President responsible for the development and application of improved analysis and design methods. Dr. Brackett has been a consultant to several major computer manufacturers on new program development techniques for improving programming productivity. He has presented this seminar to many large industrial and government organizations, including ITT, MITRE, United Technology, the U.S. Navy and U.S. Air Force. Together with Dr. McGowan, he developed a new graduate-level course in Software Engineering at Brown University.

Clement L. McGowan, PhD is a consultant to SofTech, and is an Assistant Professor of Applied Mathematics at Brown University. Dr. McGowan co-authored the recently published book, *Top-Down Structured Programming Techniques*. He has been a consultant to the IBM Federal Systems Division responsible for the development of many of

the new methods currently receiving widespread attention. He is an associate editor of the *Journal of Computer Languages* and is a member of the IEEE Computer Society, ACM and Sigma XI.

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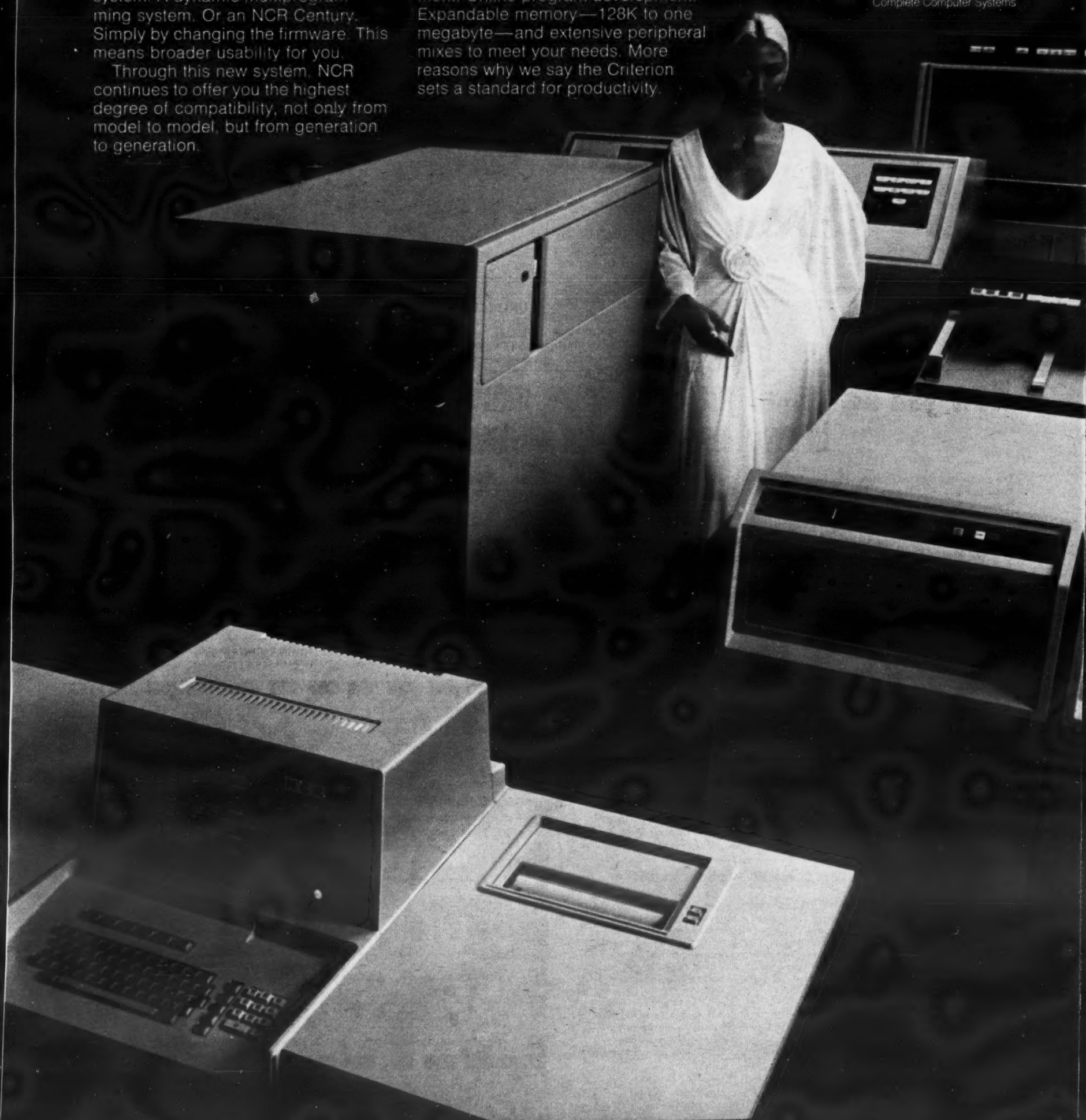
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CI Notes

HP Rings Up \$3 Million

In Sale of 3000s to Iraq

CUPERTINO, Calif. — The Republic of Iraq has ordered more than \$3 million worth of HP3000 computers and related peripheral gear from Hewlett-Packard Co. (HP).

The 21 systems will be installed in Ministry of Industry and Minerals departments throughout Iraq after applications are developed at ministry headquarters in Baghdad.

Deliveries will begin in late summer. The order also includes 66 HP2640 CRTs with Arabic character sets designed by the customer, HP said.

Univac Develops SNA-Like Scheme?

NEWTON, Mass. — Univac is reported to be developing an approach to data communications called Univac Network Architecture (UNA).

The concept is said to be similar to IBM's Systems Network Architecture (SNA), but will not lock in the user to one specific vendor as SNA does, according to industry sources.

Univac has not indicated when UNA will be announced nor with which systems it will operate.

CIA Membership Totals 37

WASHINGTON, D.C. — Membership in the Computer Industry Association (CIA) now totals 37 with the addition of Management Assistance Inc., Nixdorf Computer, Inc. and Hudson General Corp.

Auerbach Spins Off Consultants

PENNSAUKEN, N.J. — Auerbach Corp. for Science and Technology has spun off its consultancy arm, Auerbach Associates, Inc., to a group of current management of that company and other employee owners.

Supershorts

Data Dimensions, Inc. has agreed to market Texas Instruments' Silent 700 terminals.

Computer Communications, Inc. (CCI) has signed a three-year equipment purchase agreement with North American Corp. (NAC) under which NAC will buy up to \$10 million of CCI equipment for least to CCI customers.

3M Co. has formed the Information Management Department by merging its facsimile products with the word-processing and data entry systems of its subsidiary, Linolex System, Inc.

By Molly Upton
Of the CW Staff

TULSA, Okla. — One solution to the dilemma presented by OEM's preference for services from suppliers of minicomputer peripherals but their unwillingness to pay for them is unbundling, or separate pricing, according to Louis E. Schultz, head of the business management office at Magnetic Peripherals, Inc.

Schultz's survey of OEMs showed the 17 respondents ranked the offering of regionally located spare parts as the most desirable among 13 presale and postsale support services.

Seventy-one percent of those responding placed a positive value on this service and indicated they would be willing to

pay an average increment of 2.2% over the product price for regional location of spare parts.

The respondents included large systems makers, minicomputer manufacturers and systems houses.

Large manufacturers indicated they would be willing to pay a 1.4% increment, mini makers 3% and systems houses 2.5%. Mini makers indicated this offering was of a greater incremental value to them than all others combined, according to Schultz.

The next highest scoring for an offering was systems integration support, which was valued at 1.6% of the selling price.

In the presales area, "the results indicate the lowest price was a more powerful

factor, but various services were considered valuable to some individuals," the report on the survey results observed.

Accordingly, it is up to the OEM supplier to know his territory and evaluate whether the potential business is worth the cost to him, Schultz said.

Design Support Worth 9%

The topics for consideration under presale services and their assigned incremental values were 1% each for evaluation support and trained technical salesmen; 9% each for controller design consultation and systems design consultation; and 3% each for competitive comparison information and controller and system design publications.

Unbundling would help keep the prices of products low in the mini peripheral mart, which is marked by extreme price consciousness, Schultz said.

The respondents were more positive toward postsale support than presale support. The average incremental value of all postsale services listed was 1.6% by the large manufacturers, .9% by the mini makers and 1.9% by the systems companies.

Other items in the postsale services were responsiveness to evaluation and follow-up questions, 1.5% each; regionally located service, 1.2%; salesman's and follow-up support, 1.5%.

(Continued on Page 37)

NCR Transition Nearly Complete; Company Targets Three Markets

DAYTON, Ohio — "NCR has pretty much completed its transition into a computer systems company" and is setting its sights on three developing markets in the industry, all of which are based around the general-purpose computer, according to William S. Anderson, the firm's president.

Since 1972 NCR has invested \$270 million in R&D to expand its capabilities in three markets of "above-average potential": distributed DP systems; sophisticated on-line systems; and interactive systems specially tailored to the requirements of different lines of business, Anderson said here recently.

NCR plans to spend over \$100 million for R&D this year. "The general-purpose computer has been, and remains, the heart of this massive systems development program," he said.

The evolution from a supplier of free-standing mechanical business machines to an electronics company, principally a computer systems company, is illustrated by the fact that computer and data terminal revenues contributed 75% of NCR's total equipment revenues in 1975 and are expected to provide 85% to 90% of those revenues this year, he said.

"Both our mainframe business and our data terminals business have grown rapidly. Since 1972, for example, NCR's computer equipment revenues have more than doubled, for an average annual growth rate of 25%," Anderson noted.

"Last year those revenues alone reached \$462 million," he added.

When other elements of NCR's computer systems business are included, total DP volume is almost \$1 billion annually, Anderson said.

These other elements include revenues from unbundled software and other customer support, field engineering, data centers, the sale of DP supplies and the sale of data terminals which are part of NCR's computer installations, he explained.

"The growth of our mainframe business (Continued on Page 37)

Hogan Stresses Cost Reduction In Computing Power With LSI

By a CW Staff Writer

BOSTON — By tossing into the audience computing power equivalent to that valued at \$18 million in 1953, C. Lester Hogan, vice-chairman of the board of Fairchild Camera & Instrument Corp. recently emphasized the cost reduction of computing power that has occurred as part of the large-scale integration (LSI) revolution.

As Hogan threw 18 of Fairchild's F8 chips during the keynote address at Electro '76 here, he observed each chip contained roughly as much power as IBM's 701 machine, which cost \$1 million when introduced.

The chips cost \$10 to \$12 each in large quantities.

Although microprocessors are the most exciting component of the LSI revolution, the movement is broader and much more fundamental than microprocessors alone, he said.

As another example of the declining cost of electronics, he compared the Fri-

den electromechanical calculator, which sold for \$800 or more and handled four functions, with a simple \$10 one-chip calculator.

One of the most significant elements of the LSI revolution is the reduction in engineering design time for a product when one uses a micro as a component, he said.

Fifteen years ago it took perhaps 50 man-years to put together a complete working system with transistors, etc. Now this can be done in about nine man-months with a microprocessor as a component, Hogan said.

This shortened design phase has several ramifications, among them ease of finding capital for products that can be put on the market relatively quickly, he said.

Hogan claimed the electronics field has come full circle. While venture capital was readily available 20 years ago, this commodity has virtually dried up for those firms trying to start manufacturing

(Continued on Page 38)

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CW Photo by R. Frank
William S. Anderson

NCR Nearing Completion of Transition

(Continued from Page 35)

has been exceeded only by the growth of our data terminals business. During the same four-year period — since 1972 — NCR's sales of data terminals have increased sixfold.

"Last year they totaled \$460 million, a gain of 55% over the prior year," he stated.

Claims 7% of World Base

Anderson estimated NCR's computer user base at over 20,000, which he said represents about 7% of all the general-

purpose computers installed worldwide.

About 5,000 of those sites are comprised of Century computers. The remaining installations are smaller systems, primarily NCR 399 minicomputers, he said.

Sees Revenues Over \$2 Billion

The transition from mechanical to electronic systems enabled NCR last year to exceed \$2 billion in worldwide revenues for the first time in its history. "We expect to do better than that in 1976," Anderson said.

"Certainly our bookings for the first quarter of this year point in that direction. Here in the U.S., total incoming orders through March were up 62% over the comparable period of last year.

"In fact, March domestic bookings were the highest ever recorded by NCR for a single month. Computer orders in the first quarter rose 79%," Anderson said.

"Outside the U.S., incoming orders in March established a new record for that month," he noted.

"It is significant that, both economically and overseas, bookings for computer equipment led all other equipment categories in terms of percentage of objective. Orders for more than 500 Century systems of various types plus a large volume of add-on sales set a first-quarter record for incoming computer business," he continued.

Plans to Enlarge Share

Anderson indicated the firm plans to "significantly increase its share of the total DP market during the next several

years with the addition of the Criterion systems and others to follow.

"Product development, manufacturing and marketing have been reorganized and streamlined to reflect our emphasis on providing complete computer systems," he said.

At the same time, revenue per employee has almost doubled, rising from \$17,000 in 1972 to over \$30,000 last year.

"Corporate profitability, meanwhile, has moved from a loss of \$60 million in 1972 — after write-offs connected with our transition to electronics — to earnings of \$72 million in 1975," he said.

Unbundling Seen OEM Solution

(Continued from Page 35)

In some questions, the responses from different sectors varied widely, reflecting their organizational strengths. For instance, large manufacturers valued regionally located service engineers at .4% while mini makers ranked this service 1% and system companies ranked it at 2.5%.

"The supplier must pause to reflect in his planning to consider the market he wishes to serve. If it is the systems house, then the service organization required is more than that for the other two markets," Schultz observed.

Although 71% rates salesmen's follow-up support at no value, suppliers should make certain — before adopting a "love them and leave them" attitude — their accounts are not among the 29% that do value postorder support, he commented.

Schultz's report recommended mini peripherals firms offer separately priced technical support for evaluations and systems integration as well as controller and systems design consultation.

Firms should also plan to implement

local spare parts depots, promote this concept to prospects and offer a price discount for parts when long delivery times are acceptable, he said.

The cost of providing quick response from the factory to inquiries should be included in the price of the product, he advised.

The same pricing method should apply for salesmen, who should be instructed in their responsibilities for postsale efforts.

Finally, Schultz advised firms to investigate methods of changing the OEMs' perceptions to achieve consonance between the lowest price requirement and desire for additional services.

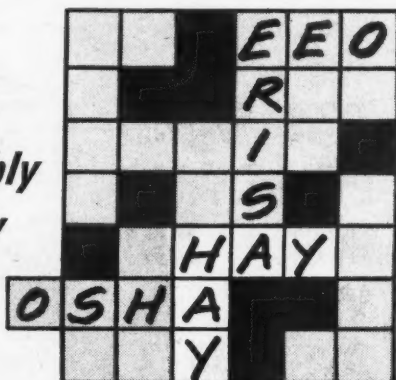
Southwest Show Set This Week

DALLAS — The Southwest Computer Show will be held here at the North Park Inn May 27 and will feature OEM and end-user products.

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Ann Arbor Credits Prices, Niche With Growth

By Molly Upton
Of the CW Staff

DETROIT — Price competitiveness and a niche in the marketplace have helped Ann Arbor Terminals, Inc. grow from a firm with an initial and sole capital of \$15,000 in 1970 to a company that expects to do a little over \$4 million in sales for the year ending in June, according to President Ed Zimmer.

Niches are nice to have in the market, but there are no clean ones, he said. The line is fuzzy because someone else can always "almost" do the same job, he said.

One needs a price advantage in order to get attention, he said. "Over time the niche becomes defined by virtue of your filling it," he added.

The firm makes CRTs and offers a variety of special features such as different character sets. Ann Arbor builds terminals in a modular fashion and tries to design them to facilitate the addition of special features, Zimmer explained.

"We try to anticipate what people want and build these

Technitrol Head Dies

BRYN MAWR, Pa. — E. Stuart Eichert, holder of a patent for disk and drum memories and chairman of Technitrol, Inc., died here recently.

Eichert was one of four founders of Technitrol in 1947 and received the patent for disk and drum memories in 1952.

capabilities into production," he said.

On the subject of surviving, Zimmer said "there's nothing magic about it. We want very much to do a good job for customers and to make a profit."

Ann Arbor has turned away

business when both elements weren't there, he said.

Zimmer characterized his business approach as picking his shots rather than as a shotgun technique.

The firm employs 50 to 55 people and personnel hasn't

grown much since sales reached \$1.5 million, he said.

Ann Arbor offers factory service on its products with a two-week turnaround.

About 50% of sales are for some modification of terminals and 50% for standard products, he said.

Ann Arbor's products are not programmable, but do have several intelligent features built in, such as editing.

Zimmer has been looking at using microprocessors, "but so far the pricing isn't right for our use."

Zimmer said he doesn't see Ann Arbor offering user-programmable units.

Ann Arbor doesn't have a "razzle-dazzle" sales force, he said.

The rep scheme has been working well since "we found how to use them," he said. The secret to handling reps is to give them good support out of the factory, with consistency and dependability, he observed.

Hogan Stresses Low Cost of LSI

(Continued from Page 35)

micros, he said.

"The capital required is too rich for their blood," he explained.

However, there is capital for bright young people with ideas based on micros who can get their product to market quickly, he said.

Micro in Every Home

"By 1980 there will be a microprocessor in every home and every car," Hogan predicted later at a press conference.

Fairchild is very excited about electronic games and the implications of thus placing a computer in every home, he said.

Initially, games will be installed and linked to TV sets. Children will become familiar with the interfaces and gradually the entire family will use the system for increased capabilities.

When asked whether he foresees other types of firms entering this area, Hogan remarked that when the semiconductor content of a product reaches 40%, "it's going to be very difficult for others to compete."

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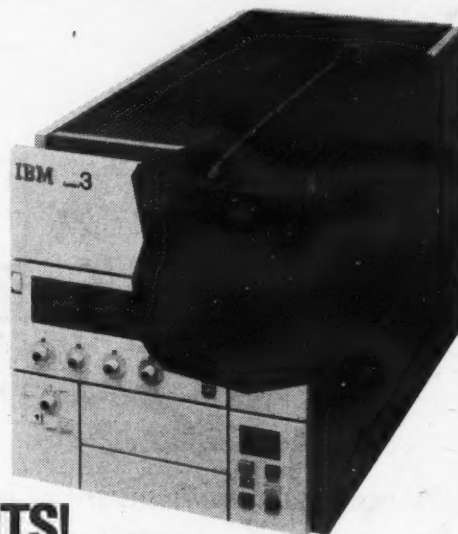


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Sycor Delivers First 440 System

FRANKLIN PARK, Ill. — Sycor, Inc. has delivered its first 440 clustered-terminal processing system to Borg Warner Corp. where it is being used by the Aftermarket Components Division of the Transportation Equipment Group.

The 440 will be part of a distributed processing network the firm is establishing.

Other Orders

E.F. MacDonald Sales Center has installed 25 NCR 280 retail terminals equipped with wand

scanners, an NCR 747 color bar code printer and an NCR 725 minicomputer.

Fairview Hospital has installed a Univac 90/60 system to broaden its application and development of DP services in the medical field.

Cenex, a regional farm supply cooperative headquartered in St. Paul, Minn., has ordered four Univac 90/30 systems for on-line order entry and inventory control at its four distribution centers.

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For a national transportation consulting practice located in Washington, D.C. Qualified applicants must have a graduate degree in computer science and 2-5 years experience in one or more of the following areas: interactive graphic systems; data base systems; programming languages, and modeling/simulation techniques. Successful design and implementation experience must be demonstrated. The successful applicant must be able to:

- Design software packages based on broadly stated functional requirements;
- Ensure that designs incorporate best practice and design techniques;
- Prepare designs for software testing;
- Document and implement software packages;
- Participate in redesign and/or modification of existing software packages; and
- Present and discuss designs with clients.

Please forward resume and salary requirements to:

CW Box 4659
797 Washington St.
Newton, Mass. 02160
Equal Opportunity Employer M/F

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TIME FOR A CHANGE?

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2 or more years exp.
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5 or more years exp.
- Syst. (Software) Progs \$15-23K
1 or more years exp.
- Mgrs. Syst. & Progrms \$18-26K
Min. 2 years Mgmt.

For further information on these and other positions, send resume in strict confidence to:

Mark Fuller
CADILLAC ASSOCIATES, INC.
32 W. Randolph St.
Chicago, IL 60601
(312) 346-9400

position announcements

SYSTEMS PROGRAMMER

Familiar with one or more of the following:

- OS/MVT internals
- HASP internals
- WYLBUR/MILTEN internals
- MODCOMP assembler

Upgrading of 360/65 and the move toward terminal-oriented computing require staff expansion. Duties include system maintenance, modifications to enhance performance, consulting aid to administrative programming group. Resume & salary requirements to:

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Computing Center
Clarkson College
of Technology
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An Equal Opportunity/Affirmative Action Employer

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This national service firm seeking true DATA PROCESSING PROFESSIONALS. Several years of business, on a national level, enables us to double our staff in 1976. CWI has 3 lucrative pay plans, rapid growth without restrictions and career development with commensurate financial remuneration. We are currently staffing for MIAMI, SAN FRANCISCO, DETROIT, CHICAGO, HOUSTON, DALLAS, PITTSBURGH and PHOENIX.

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Dir.—Corp. Recruiting
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(214) 243-3421

PROGRAMMER ANALYST

NCR Century small installation in manufacturing company in Western Mass. Require knowledge NEAT 3, operating software and 3 years experience, including accounting and manufacturing applications. Salary range to \$15,000 depending on experience. Send resume in confidence to:

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DATA PROCESSING MANAGER

400 bed acute care hospital seeking an experienced D.P. manager to install, implement, control and coordinate a new D.P. department. Hardware is IBM system/3-Model 12. Hospital experience not necessary but programming ability a must. Negotiable salary with excellent benefits. Contact:

Lon Estes
Personnel Director
1825 Logan Avenue
Waterloo, Iowa 50703
(319) 235-3961
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PROGRAMMER

Boise, Idaho

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This growth position offers competitive starting salary, liberal benefits package, and relocation. Send complete resume including salary history and requirements to Personnel Manager, P.O. Box 10, Boise, Idaho 83707.

Ore-Ida Foods, Inc.

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Work in a constantly challenging environment — management consulting.

We are a major consulting group within a "Big 8" accounting firm and because of expansion have need for two individuals.

If you are a professional in data processing with 2 to 5 years "hands on" problem solving experience for business, industry, or government, we offer an exceptional opportunity for personal advancement. A graduate degree is highly desirable but not essential.

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DEC-10 SYSTEMS PROGRAMMERS

We offer unique opportunities in the areas of remote computing systems and program language development. In addition to our Honeywell and IBM hardware, we run 2 DEC KI 1070's and a DEC KL in support of over 4,000 users across the U.S.

Various levels of opportunities exist for candidates with DEC-10 experience in compilers, text editors, assemblers, loaders, MACRO 10, DDT or BLISS. These positions offer real growth potential in a highly professional development environment. Compensation commensurate with experience. Comprehensive benefits including 100% tuition aid.

Please write in strict confidence to:

Roland Lenniger
Manager,
Employee Relations

rapidata

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1976 Computer Salary Survey.

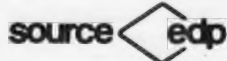
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"The Next Step", Source Edp's tenth annual salary survey and career planning guide, is now available. You'll also receive without charge our latest "Digest of Computer Opportunities" describing specific career openings currently available within our client organizations nationwide.

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100 South Wacker Drive
Chicago, Illinois 60606



(P.S. Be sure to use home address and indicate position title.)

Or call your nearest Source Edp Office:

East: Boston (617/237-3120), New York-New Jersey (201/687-8700), Philadelphia (215/665-1717), Washington, D.C. (703/790-5610).

Midwest: Chicago (312) 782-0857, Cleveland (216/771-2070), Detroit (313/352-6520), Kansas City (816/474-3393), Minneapolis (612/544-3600), St. Louis (314/862-3800).

South & Southwest: Atlanta (404/634-5127), Dallas (214/638-4080), Fort Worth (817/338-9300), Houston (713/626-8705), New Orleans (504/523-2576).

West Coast: Los Angeles (213/386-5500), Irvine, CA. (714/833-1730), Palo Alto (415/328-7155), San Francisco (415/434-2410).

PROGRAMMER/ANALYSTS

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Experience in large systems with high level languages COBOL, PL/I and ALC are our most often hired individuals. It would be helpful if these individuals utilized IMS, TOTAL or MARK IV. In addition, a person with STAIRS could be given immediate consideration. However, all experienced personnel are invited to reply.

It does take time to respond to all resumes, so please be patient we will be calling you.

We offer excellent compensation with an above average health and insurance plan, which are only a small part of the total benefits of association with a growing consultant firm.

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CIBER, Inc.

17200 W. 10 Mile
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Southfield, MI 48075
(313) 559-0310

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"San Francisco Peninsula"

If you have an advanced degree in Computer Science, Math or equivalent with 4 years' experience in Data Base Systems, we invite you to consider this immediate opening at our Palo Alto, California facility.

Areas of responsibility will include:

- Research & Development in Data Base Management,
- Implementation of a distributed Data Base System,
- Mini-computer Networks.
- User Interface to Data Base Management Systems.

If you would like to become associated with a leader and accelerate your career, please send resume with salary requirements/history to Professional Employment, Dept. RCL-14.

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No phone calls please. Send resume to Personnel Officer, Canal National Bank, Portland, Me. 04111.

PROGRAMMING

New York ... New Jersey

A Partial List of Positions Avail.

Data Base Specialist \$25K

IMS a Must!

Systems Analyst \$22K

OS/COBOL and IMS reqd.

Project Manager \$20K

Mfg exp needed!

Programmer \$16K

COBOL Exp OS or DOS

For details plus additional growth

situations contact Paul Torelli,

Vice-Pres. of Data Processing

(201) 488-1910.

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Hackensack, N.J. 07601

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We are a growing multiline Insurance Company doing business in 11 Northeastern states. We are seeking a "Results Oriented" Systems Analyst with a demonstrated record of performance.

The position requires 3-4 years of Insurance Systems experience with heavy emphasis on EDP.

We offer a sound company paid benefit program and a salary based on experience and qualifications.

Send resume and salary requirement to PERSONNEL DIRECTOR, Farm Family Insurance Companies, P.O. Box 656, Albany, New York 12201. An Equal Opportunity Employer M/F.

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N.E. Industrial has immed need for expd indiv w/large scale IBM bkgrd + emphasis on BTAM, HASP, BAL & T.P. Systems. Mini's used as terminals or remote processors + corresponding exp is also desired. Salary to \$18K (fee pd). Contact Stan Durbas (in confidence).

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111 Pearl St.

Hartford, Conn. 06103

(203) 278-7170

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Ohio 44251

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Join ALBERTSON's, one of the West's most progressive supermarket operations! Expansion & promotion have created exciting new growth opportunities!

We seek aggressive, growth-oriented people to assist in continuing development and implementation of systems in accounting, marketing, wholesale procurement, inventory management and distribution.

These positions require minimum 2 years exp. as an Analyst in wholesale, retail and/or accounting areas, preferably in the supermarket industry.

Excellent compensation, benefits and working environment in one of the most beautiful areas in the West. For consideration, send resume, including salary history to Personnel Department, ALBERTSON's, P.O. Box 20, Boise, Idaho 83726. An equal opportunity employer.



Data Processing

SYSTEMS ANALYST

Northwest Computer Services, the DP subsidiary of Northwest Bancorporation, is looking for an experienced Systems Analyst at our location in Minneapolis. NCS is a large operation located in 6 states with its centralized computing facility in Minneapolis. We have a multiple 158/168 hardware configuration and a high degree of sophistication in banking systems. We feel we can offer exciting challenges for the right individual.

The proper candidate must possess experience in the design and analysis of on-line systems with a minimum of 3 years DP experience. Good communication skills are also required.

Helpful qualifications include experience in banking and financial applications, programming, and minicomputers.

This position offers a unique opportunity to participate in the design of advanced on-line services. Excellent salary and relocation package plus many company benefits. If you feel qualified for this growth position send a resume with salary history in confidence to:

Dale Hayden

NORTHWEST COMPUTER SERVICES

Box B-1397

Minneapolis, Minn. 55480

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BANKING SYSTEMS

Management Consulting isn't your only career option. But it may be your best.

The management consulting field is just one area of application available to talented computer professionals. It is, however, one of the single most intellectually challenging and stimulating career options open to first-class minds.

As one of the leading general management consulting firms in the world, Booz, Allen & Hamilton can offer the rewards of a commitment to quality if your technical skills meet our requirements.

In helping management to translate business plans into information system strategies, our involvements cover areas such as evaluation of bank EDP departments, implemen-

tation of large complex systems, and general management studies. We currently seek candidates with the following background:

- 3-5 years hands-on experience in major commercial bank computer application, including DDA, savings commercial and trust.
- Experience in EFTS planning or implementation desirable.
- Background in design and implementation of several major systems. Contact with user departments and appreciation of central computer operations important.
- Familiarity with bank office workflow and paper handling an asset.

This is a position involving travel and offers an attractive compensation package and benefits plan. You may respond with a resume, personal letter, or even a business card with your home phone number. Direct applicants with on-target experience should contact Mr. Allen Wurzbach, Booz, Allen & Hamilton Inc., Dept. CW-2, 245 Park Avenue, New York, N.Y. 10017. We are an equal opportunity employer m/f.

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If you meet ANY of the following seven qualifications, we will tell you about a phenomenal CAREER opportunity with one of the most progressive computer organizations in the world... that now has 9 newly created sales positions.

- Experience in sale of any hardware
- Experience in sale of any software
- Systems engineering (min 2 yrs exp)
- BSEE; 1 yr any exp (marketing oriented)
- Sales of peripherals to the scientific or consulting engineering market
- Sales of peripherals to OEM's
- Sales of peripherals to the financial community

Company offers compensation packages up to \$30,000 & excellent benefits. All candidates referred to the client... will be evaluated by them for both their immediate sales needs & near term (18 months) management needs. For your convenience, you may either call MRS. KAYE at (212) 986-0100 for a private chat, or forward your resume to us. (Interviews by appointment only, please). Client company assumes all fees & relocation costs.

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EDP SEARCH, 405-525-8833, 2401 NW 39 Okla. City, OK 73112.

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The University of Scranton is seeking candidates with programming backgrounds to fill 3 positions with emphases in different areas: (1) Faculty support - requires familiarity with statistics and the use of statistical packages. (2) Administrative support - to write and maintain programs for in-house systems (3) Administration-oriented candidates with programming competence for the position of Assistant Registrar. Minimum requirements common to all positions are one year of experience and a bachelor's degree (preferably in Computer Science) with FORTRAN and COBOL programming. Plus factors are experience with documentation, structural programming, Xerox equipment and CP-V. Salary: \$10,000 to \$11,000. Send resumes to:

Personnel Services
University of Scranton
Scranton, PA 18510

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The United States Coast Guard Academy

New London, Connecticut
Division of Academics,
Department of Computer Science
Has an opening for a teaching faculty position in Computer Science beginning Fall Term 1976. Involves teaching introductory and advanced Computer Science courses at the undergraduate level. PhD in Computer Science, Mathematical Sciences, or related field required. Academic rank commensurate with qualifications.

Send resume by 20 June to:
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Systems Programmers—OS/HASP experience required. IMS, TSO support experience desired. Send resume including education, experience & salary history to:

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OF FORT WORTH
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(817) 732-8191

HEAD OF
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- Administrative responsibilities for the systems programming staff.
- Planning systems programming activities.
- Technical support for in-house developed system software including a file management and a time-sharing system.

This position requires 3-5 years' systems programming experience coupled with proven project leadership experience. Qualified candidates must have at least three years' medium systems Burroughs experience.

To apply for this excellent career opportunity which pays in the low 20's, please send resume only to Mr. S.P. Heinrich, 30 Pearl St., Boston, Mass. 02106.
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IMS Project Manager
To \$26,000
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To \$25,000
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To \$19,000
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To \$19,000

All positions offer excellent growth, compensation, and benefits. Please send resume and salary history in strictest confidence to:

J. Peter Marshall Associates
Executive Search Consultants
1000 R.I.D.C. Plaza, Suite 311
Pittsburgh, PA 15238

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A computer professional to serve as liaison between the computing center and the faculty, and to serve as a consultant to the academic community. Desirable qualifications include two years educational/instructional/research computer applications; Master's Degree in Computer Science, Mathematics, Business, or related field. Salary range \$13,418 to \$17,663.

Apply to Frank Davis, Director of Computer Services, Bloomsburg State College, Bloomsburg, PA. 17815. Letters of application and resumes must be received by June 15, 1976.

Bloomsburg State College does not discriminate on the basis of race, color, creed, age, sex, or handicapped as required by Title IX and other legislation.

Software
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Our recent entry into the library automation field has created two new opportunities for experienced software specialists to participate in a project team effort for the development of automated systems products geared to the library marketplace. As a member of the project team, you will have direct responsibility for the full development of data storage/retrieval or teleprocessing software within a mini-computer environment.

These two positions require specific experience in data base development/management or telecommunications for on-line interactive applications using local and remote terminal equipment on a mini-computer. The ability to work in a self directed environment on long term objectives, previous experience in product development efforts, broad D.P. equipment/languages experience, and some exposure to mini-computer applications are essential. Exposure to PDP-11 series mini-computers is highly desirable.

Both positions offer immediate opportunity for involvement in the development effort for this new business activity. Each offers an attractive compensation package including company paid benefits and relocation assistance.

Brodart is a full line supplier of products and services to the library market throughout the U.S. and Canada.

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BRODART INC.

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COMPUTER DEVELOPMENT
DIAGNOSTIC PROGRAMMERS
Fort Lauderdale, Florida

SYSTEMS Engineering Laboratories, Incorporated, an AMEX-listed manufacturer of general purpose real-time computing systems, is enjoying rapid growth generated by our product achievements. Our SEL 32 MINI is one example with a throughput rate of over 26 million bytes/second as well as economic advantages.

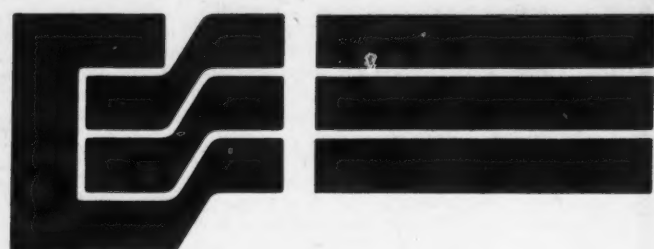
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Individuals interested in becoming a member of a highly motivated team of computer designers should have experience in assembly language, programming at the hardware level and familiarity with the operation of I/O devices. Some hardware background (technical school, military or industry experience) is required.

Systems offers top starting salaries, relocation to beautiful Fort Lauderdale, Florida, a full-range benefits program and the opportunity to work and advance your career in a congenial and stimulating professional environment. For immediate and confidential consideration, please forward resume or detailed letter of information, including current annual compensation, to Mr. Daniel Squires, Employment Manager, Dept. MH59, FN425, OS59.

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E-Systems is a leader in reconnaissance and intelligence gathering systems, electronics surveillance and other defense programs of a passive nature.

We're a high technology systems company with annual sales of over \$200 million. We market products and services in more than 40 different countries. Our stock is listed on the New York Stock Exchange. You'll own some of that stock if you come with us.

We're looking for a few outstanding scientific programmers. People who can step into lead and associate positions to interface special purpose hardware with computers in real time state-of-the-art systems. Requires five to ten plus years experience in the production and test of product software for real time/near real time/process control or data base management applications utilizing large scale or mini-computers. Special emphasis will be placed on experience with IBM 370 assembly language under OS/MVT. Experience with the production of deliverable product software to support electronic systems in government procurements is highly desirable.



E-SYSTEMS

Garland Division

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including salary
history, to:
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Programming

Analysts/ Programmers

International Division

Levi Strauss International is now engaged in major systems development project for its worldwide operation. The systems environment will be IBM System/3 using RPG II. Several programming and analysis positions exist for talented, professional team players who desire to participate in a multi-national organization. Positions based in San Francisco.

Basic positional requirements are:

1. Minimum of 2 years' recent heavy programming and analysis experience on System/3 and RPG II.
2. Ability and desire to travel extensively. Temporary (6-9 months) residence in Europe is absolutely required. Thereafter, approximately 20% travel internationally.
3. Degreed individuals with fluency in one or more languages (German, Italian, French, Spanish or a Scandinavian language) are preferred.

If interested, please forward your resume including salary requirements to Corporate Employment Manager, Personnel Department, Levi Strauss & Co., Two Embarcadero Center, San Francisco, Ca. 94106. We are proud to be an equal opportunity employer.



MEDICAL COMPUTER SYSTEMS

The automated health care industry is one of the fastest growing in the U.S. TELEMED Corporation is the world's largest processor of electrocardiograms (ECG's) by computer. We are a profitable, fast growing public company. We seek superior professionals with solid backgrounds in the following areas to fill immediate openings created by internal growth:

REALTIME SYSTEMS: Develop software for minicomputer based electrocardiogram analysis system. Previous applications background helpful but emphasis should be in system and realtime software. Timesharing link and 2 hands on interdatas at your disposal.

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OPERATING SYSTEMS: We have plans to upgrade 2 K110's to 2 KL10's with 256K of core within a year. We need someone who is interested in jobs such as performance analysis and/or modifications of TOPS10, installing CUSPS, and adding software for front end minicomputers of various manufacture.

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TELEMED provides a stimulating and challenging environment for highly qualified individuals. We have two Xerox Sigma S computers, two DEC K110 computers and 5 minicomputers of various manufacture. We have been described as the largest real time medical data processing facility in the world. We provide resources to maximize your efficiency and technical achievements through your own CRT for time-sharing or hands on minicomputer machine time. Our rapid growth creates advancement possibilities for the future. Please indicate areas of interest in reply:

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DIRECTOR COMPUTER CENTER

Manage academic and administrative service, develop system capabilities on DEC PDP 11/55. Responsibilities: system and personnel, development, writing new applications software. Coordinator of Academic Computing: half-time teaching, half-time interfacing with faculty re program development. Contact re either position: President's Office, Dickinson College, Carlisle, PA 17013. An equal opportunity, affirmative action employer.

Programmer Analyst BAL/CICS/VS

Maj corp seeks 2 yrs BAL 370/145 DOS VS exp. 1 yr solid CICS-new applications inventory replenishment, warehousing, etc. Small group, good visibility, immediate interviews.
\$13,000-\$18,000 Fee Pd.
Bill Borelli (212) 349-3610

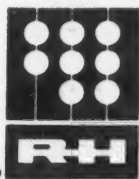
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COMPUTER CONTROL SYSTEMS

An administrative position in the computer controls area of material handling systems. Must have experience with both computer hardware and software products; systems analysis, design, development and installation of automated systems.

Individual must be highly self-motivated, comfortable with detail, capable of working with little supervision, ability to interface with and coordinate various departments, vendors and customer personnel. Responsible for both pre- and post-sales activities.

Degree in engineering, business or computer science plus a minimum of 6 years experience in computer systems and related fields (preferably both data processing and process control applications).

Experience in material handling and mini-computers systems, real time software and control electronics hardware are a plus.

Contact R.P. Dentner, Personnel Manager, Phone 1-215-252-7321, Ext. 282.



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Equal Opportunity Employer M/F

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We have been exclusively retained by our client, a prestigious New York financial institution to recruit a solid EDP professional. Extensive EDP, stock brokerage accounting and records processing skills essential for this challenging position. Emphasis in automated audit procedures and advanced statistical sampling is a necessity. Excellent interpersonal skills are imperative to this growth oriented opportunity.

Salary commensurate with ability and experience. Excellent benefits program. Send resume with salary history in confidence to Mr. B.B. Chalfin.



**Jensen-Tracy
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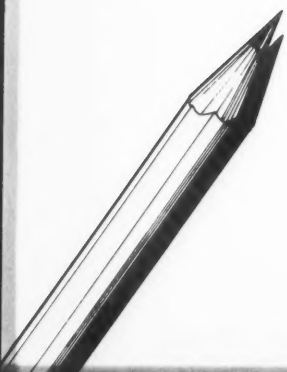


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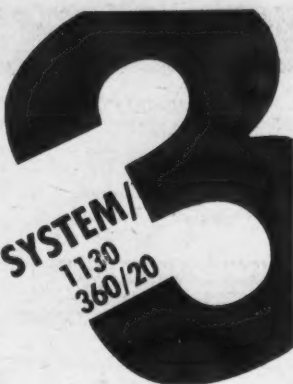
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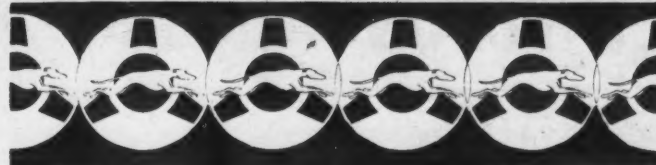
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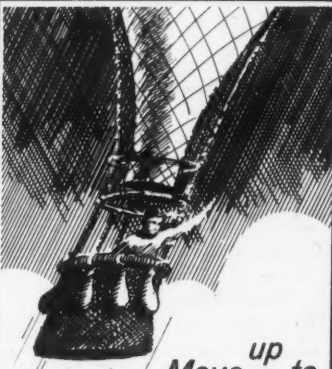
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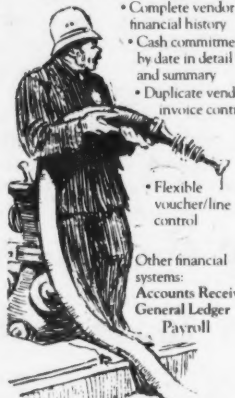
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Request for Proposal No. 244 for the purchase of a disk storage device to
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Request for Proposal No. 245 for the purchase of equipment to interface
with an existing PDP 8/e computer system to allow analog to digital
conversion, monitoring, and data collection and analysis from gas chroma-
tograph, spectrophotometer, and x-ray diffraction instruments.

Request for Proposal No. 246 for the lease or purchase of a direct access
storage device of the fixed storage medium type with a capacity of 317.5
mb per drive.

Detailed specifications may be obtained from the CDPA office. The
CDPA reserves the right to reject any and all bids and proposals and to
waive informalities. Clyde P. Ballard, Executive Director, Central Data
Processing Authority.

Singer Presents Profitable First Quarter

By Molly Upton

Of the CW Staff

BOSTON — Devoid of its Business Machines Division, Singer Co. presented stockholders with a profitable first quarter.

"We have accomplished our primary objective of restoring the company to profitability," Chairman Joseph B. Flavin told stockholders at the firm's annual meeting here recently.

"We have had good indications up to this point that the worst is over, and we can expect a good, profitable 1976," he added.

Revenues rose to \$553.1 million compared with \$523.6 million in the first quarter last year. Earnings reached \$15.6 million or 81 cents a share compared with a restated loss of \$9.9 million or 64 cents a share in the year-ago period.

During the 1975 quarter, Singer incurred a loss of \$9.5 million on foreign exchange adjustments compared with a loss of \$1.4 million in 1976.

Flavin said the firm feels the \$438.8 million reserves allocated for the disposal of the Business Machines Division and other operations is adequate.

ADR First-Quarter Earnings Jump; Year Ended With Revenues Up 20%

PRINCETON, N.J. — Applied Data Research, Inc.'s (ADR) first-quarter earnings ballooned to \$332,715 or 27 cents a share compared with \$23,325 or 2 cents a share in the year-ago period ended March 31.

The earnings total was helped by a tax credit of \$163,000 compared with a year-ago credit of \$11,000. In the 1975 period there was also a \$87,397 loss from discontinued operations.

Revenues for the quarter rose to \$3.3 million from \$3.2 million.

For the year ended Dec. 31, the software firm's revenues rose 20%.

He characterized 1975 as the year "in which we were forced to 'pay the piper,' so to speak, for a combination of problems and circumstances that demanded immediate and decisive action. . . Essentially we were drastically overextended financially."

The firm could not have continued to fund its business machines operations "without disastrous effect on our other operating areas," he said.

Flavin told reporters the point-of-sale (POS) business is a good business. There are opportunities for companies in it. "Unfortunately we were overextended and couldn't take advantage of it," he said.

Flavin said he thinks Singer will stay out of the DP field. The Cogar terminal business is up for sale, he added, indicating the first priority was to take care of the large base of customers in the POS and systems areas.

Flavin said he suspects that Singer and other diversified companies didn't last in the DP arena because it wasn't their principal business. "The computer field is one of the toughest. You've got

to put your nose to the grindstone. It's got to be your main business," he told reporters.

In addition to divesting itself of the business machines operations, Singer sold its Water Resources and European Mail Order divisions and discontinued Tele-Signal products as well as Graphic Systems, which produced phototypesetting equipment.

Singer will continue to evaluate its operations, particularly those that are marginal performers, he said.

In sum, the firm closed or consolidated or made provisions to close or consolidate 13 facilities,

he said.

Singer's employee count was reduced by 13,000 by the end of the year and has been reduced by an additional 4,000 since then.

The company has repaid \$100 million of 8.25% debentures due April 15 using funds under the revolving credit line.

Total borrowings were down from \$757.5 million at March 31, 1975 to \$633.6 million for the first quarter of 1976, he said.

Flavin disclosed the firm has uncovered possible improper payments totaling under \$10,000.

Tally Chalks Up Records

KENT, Wash. — Tally Corp. scored record earnings and revenues for the first quarter ended March 28 as part of its turnaround.

Revenues grew to \$6.1 million compared with \$4.4 million a year ago, while earnings, aided by a \$378,000 tax credit, rose to \$658,000 or 19 cents a share.

This compared with \$28,000 or 1 cent a share in the same period last year when there was a \$35,000 tax credit.

The company incurred a \$165,000 after-tax loss on foreign currency exchange, notably the lira and the pound.

President Leslie A. Larsen observed: "The results of the first quarter demonstrate that our turnaround has been effected and our efforts to produce higher profits are succeeding."

"Our marketing programs for our printers are meeting or exceeding anticipated goals, and we continue to believe that 1976 will be a highly successful year for Tally."

Larsen said the firm has reduced its level of borrowings, and the generation of working capital has been particularly pleasing over the past year.

Borrowings have been reduced from about \$4.6 million at the end of 1975 to about \$3 million

currently, he said.

Backlog has risen to \$8 million at the end of 1975 compared with \$4 million at the end of 1974, he said.

INVITATION TO BID

Sealed Bids will be received in the Montgomery County Purchasing Office, Room 114, County Office Bldg., Rockville, MD 20850, until 2:00 p.m. on Friday, June 11, 1976, for third-party lease, lease purchase, installment plan purchase or straight purchase of computer hardware consisting of an IBM 370/145 J2 computer and associated peripheral equipment.

A Pre-Bid Conference will be held on Wednesday, May 26, 1976, at 10:00 a.m., in the 1st Floor Auditorium of the COB. Bid opening will be in Room 114 of the COB on Friday, June 11, 1976 at 2:00 p.m.

The Invitation to Bid will be available, after May 10, in Room 114. Bid Bond of \$3,000 will be required.

For further information, contact the Montgomery County Purchasing Office — Mrs. M. Weaver, Purchasing Agent — 279-1466.

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Earnings Reports

RAPIDATA

Three Months Ended March 31

	1976	1975
Shr Ernd	\$15	\$19
Revenue	3,844,346	3,597,326
Earnings	277,849	349,836

SYCOR

Three Months Ended March 28

	1976	1975
Shr Ernd	\$42	\$44
Revenue	15,794,000	11,196,000
Tax Cred	382,000
Earnings	1,238,000	1,217,000

WABASH MAGNETICS

Three Months Ended March 31

	1976	1975
Shr Ernd	\$33	\$14
Revenue	9,526,954	8,043,094
Earnings	550,642	230,653

DPF

Three Months Ended Feb. 29

	1976	a1975a
Shr Ernd	\$28	\$01
Revenue	6,400,000	6,038,000
Tax Cred	93,000	10,000
Earnings	1,145,000	25,000
9 Mo Shr	.38	1.13
Revenue	17,364,000	20,003,000
Spec Cred	b256,000	c4,379,000
Earnings	1,571,000	4,597,000

a-Restated. b-Consists of \$128,000 gain on repurchase of debentures and \$128,000 tax-loss carryforward. c-Consists of \$2.21 million gain on repurchase of debentures and \$2.17 million tax-loss carryforward.

HAZELTINE

Three Months Ended March 31

	1976	1975
Shr Ernd	\$40
Revenue	21,120,000	\$17,028,000
Tax Cred	280,000
Earnings	780,000	(1,040,000)

INFORMATION MAGNETICS

Three Months Ended April 3

	a1976	1975
Shr Ernd	\$36	\$40
Revenue	8,170,000	5,624,000
Tax Cred	30,000	243,000
Earnings	465,000	506,000

a-For 14 weeks.

COMMUNICATIONS SATELLITE

Three Months Ended March 31

	1976	1975
Shr Ernd	\$1.10	\$1.27
Revenue	37,276,000	36,475,000
Earnings	11,041,000	12,692,000

Scan-Data Improves

Net, Sales for Year

NORRISTOWN, Pa. — Scan-Data Corp.'s earnings and revenues improved for the year ended Dec. 31, with revenues rising to \$11.3 million compared with \$9.3 million last year.

Earnings totaled almost \$134.4 million compared with \$119.3 million last year. Tax credits were nearly equal, at \$51,000 and \$50,500 respectively for the maker of optical character recognition (OCR) and shared-processor key-entry systems.

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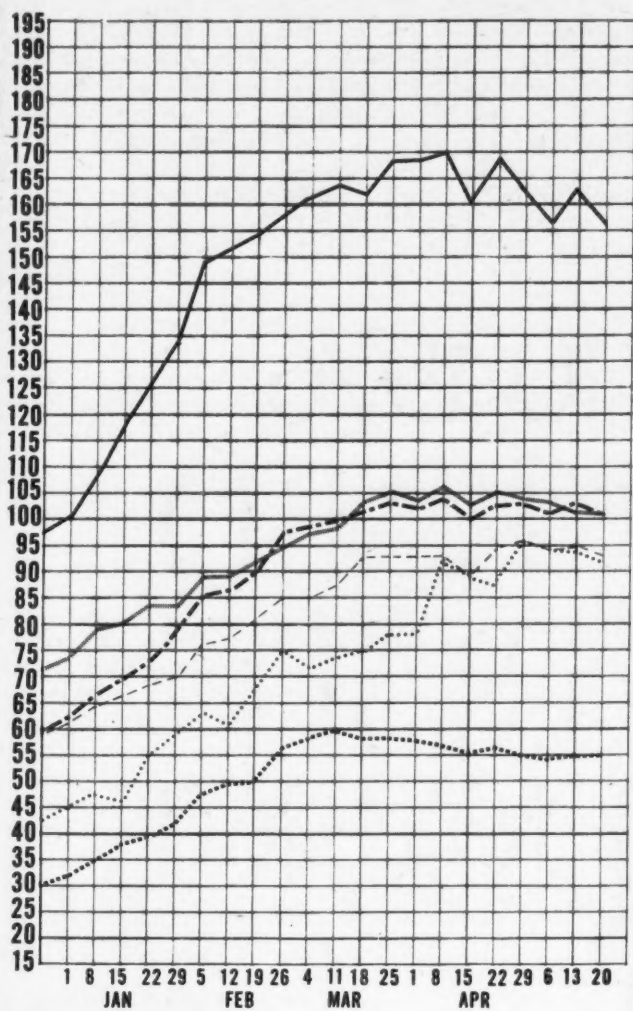
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— Computer Systems - - - - Software & EDP Services
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Earnings Reports

NATIONAL CSS
Year Ended Feb. 29

	1976	1975
Shr Ernd	\$1.95	\$1.67
Revenue	35,603,000	32,610,000
Earnings	2,161,000	1,829,000
3 Mo Shr	.54	.41
Revenue	9,314,000	7,905,000
Earnings	620,000	447,000

NASHUA
Three Months Ended April 2

	1976	1975
Shr Ernd	\$.30	\$.33
Revenue	81,998,000	74,279,000
Spec Cred	a1,336,000
Earnings	1,400,000	1,541,000

a-Cumulative effect on prior years of accounting change.

NCR

Three Months Ended March 31

	1976	a1975
Shr Ernd	\$.54	\$.84
Revenue	471,111,000	478,887,000
bSpec Cred	5,617,000	6,551,000
Earnings	13,224,000	20,848,000

a-Restated. b-Cumulative effect on accounting changes.

TRW

Three Months Ended March 31

	1976	a1975
Shr Ernd	\$.72	\$.37
Revenue	722,500,000	608,800,000
Earnings	26,500,000	14,500,000

a-Restated to reflect accounting change for translation of foreign currency.

COMPUTER AUTOMATION
Three Months Ended March 28

	1976	1975
Shr Ernd	\$.43	\$.17
Revenue	7,967,455	5,359,606
Earnings	841,500	277,032
9 Mo Shr	1.14	.48
Revenue	22,331,977	15,610,790
Earnings	2,213,466	792,943

HARRIS

Three Months Ended March 31

	1976	1975
Shr Ernd	\$1.10	\$.72
Revenue	130,643,000	123,163,000
Earnings	6,937,000	4,518,000
9 Mo Shr	3.07
Revenue	374,617,000	351,788,000
Disc Op	(18,539,000)
Earnings	19,353,000	(3,972,000)

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Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, MAY 19, 1976

All statistics compiled,
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F X C H		PRICE				E X C H		PRICE				F X C H		PRICE							
		1976 RANGE (1)	CLOSE MAY 19 1976	WEEK NET CHNGE	WEEK PCT CHNGE			1976 RANGE (1)	CLOSE MAY 19 1976	WEEK NET CHNGE	WEEK PCT CHNGE			1976 RANGE (1)	CLOSE MAY 19 1976	WEEK NET CHNGE	WEEK PCT CHNGE				
COMPUTER SYSTEMS																					
N	BURROUGHS CORP	84-108	90 1/2	-2 7/8	-2.8	O	ADVANCED COMP TECH	1- 2	1 1/4	- 1/4	-16.6	O	DATA ACCESS SYSTEMS	1- 3	3 3/4	+ 1/2	+15.3				
O	COMPUTER AUTOMATION	10- 19	15 1/2	-1 1/2	-8.8	A	APPLIED DATA RES.	2- 3	2 7/8	0	0.0	O	DATA LOG	7- 13	10 1/4	- 3/4	-6.8				
N	CONTROL DATA CORP	18- 27	22 1/4	- 7/8	-3.7	N	AUTOMATIC DATA PROC	54- 67	65 1/2	+ 1/4	+0.3	A	DATA PRODUCTS CORP	5- 11	9 1/2	- 1/8	-3.7				
N	DATA GENERAL CORP	40- 60	52 5/8	-2 7/8	-5.1	O	BRANDON APPLIED SYST	1- 1	1 1/8	0	0.0	O	DATA TECHNOLOGY	1- 2	1 5/8	- 1/8	-7.1				
O	DATAPoint CORP	24- 45	41 3/4	- 3	-6.7	O	COLEMAN AMERICAN COS	4- 6	5 3/8	0	0.0	O	DATUM INC	1- 2	1 5/8	- 3/8	-18.7				
O	DIGITAL COMP CONTROL	2- 4	3 3/4	+ 1/8	+3.4	O	COMPUTER DIMENSIONS	3- 7	5 1/2	- 1/4	-4.3	O	DECISION DATA COMP	2- 4	1 3/4	0	0.0				
N	DIGITAL EQUIPMENT	178-181	163 1/2	-5 5/8	-3.3	O	COMP ELECTION SYSTEMS	5- 9	9	+ 1/4	+2.8	O	DELTA DATA SYSTEMS	1- 1	1 1/2	+ 1/8	+33.3				
N	ELECTRONIC ASSOC.	2- 5	3 1/8	0	0.0	O	COMPUTER MODULONS	1- 2	1 1/4	- 1/2	-28.5	O	DI/AN CONTROLS	1- 1	1	0	0.0				
A	ELECTRONIC ENGINEER	7- 16	14 1/2	- 1/8	-0.8	O	COMPUTER NETWORK	2- 6	4 1/4	- 1	-19.0	N	ELECTRONIC M & M	1- 3	2 3/4	- 1/8	-4.3				
N	EXXCORP	28- 47	41 1/4	+ 7/8	+2.1	N	COMPUTER SCIENCES	4- 9	6 3/8	- 3/8	-5.5	O	FARRI-TEK	1- 1	1	+ 1/8	+14.2				
O	GENERAL AUTOMATION	5- 11	8	- 3/4	-9.5	O	COMPUTER TASK GROUP	1- 1	1 3/8	+ 3/8	+37.5	O	GENERAL COMPUTER SYS	1- 2	1	0	0.0				
O	GRI COMPUTER CORP	1- 1	1 1/2	0	0.0	O	COMPUTER USAGE	3- 6	3	- 1/2	-14.2	N	HAZELTINE CORP	4- 12	10 1/2	+ 3/4	+7.6				
N	HEALETT-PACKARD CO	95-117	104 3/8	-6 5/8	-5.9	O	CONSHARP	2- 7	5 1/2	- 1/4	-4.3	N	HARRIS CORP	34- 47	46 1/4	+1 1/2	+3.3				
N	HEWLETT INC	34- 56	45 1/4	-1 1/8	-2.4	O	DATATAB	1- 1	1	0	0.0	A	INCOMTECH CORP	9- 20	12	-2 1/4	-15.7				
N	IBM	227-272	253 3/4	-3 1/4	-1.2	A	ELECT COMP PRUG	1- 1	1 1/8	0	0.0	O	INFORMEX INC	7- 7	5	- 3/8	-6.9				
O	MANAGEMENT ASSIST	1- 3	2	- 1/4	-11.1	N	ELECTRONIC DATA SYS.	12- 16	12 3/4	- 3/8	-2.8	O	INFORMATION INTL INC	10- 18	15 3/4	+ 7/8	+5.8				
O	MEMOREX	18- 23	20 3/4	- 1/2	-1.6	O	INFORMATIONAL INC	1- 1	1 1/8	0	0.0	O	INTEK CORP	60-109	70	-5	-6.6				
O	MICRODATA CORP	10- 26	20 1/4	-2	-8.9	O	IPS COMPUTER MARKET	1- 2	1	- 1/8	-11.1	A	LUNDY ELECTRONICS	4- 7	4 1/2	0	0.0				
O	MODULAR COMPUTER SYS	0- 13	10	0	0.0	O	KEYSAFE ASSOCIATES	2- 4	3 1/4	+ 1/4	+8.3	O	MST DATA CORP	3- 7	5 3/8	- 1/4	-3.7				
N	MCS	24- 31	29	- 1/4	-0.8	O	KEYSAFE CORP	3- 5	2 5/8	+ 1/8	+5.0	A	WILCO ELECTRONICS	15- 23	18 5/8	+1 7/8	+11.1				
O	PRIME COMPUTER INC	4- 11	9 1/4	- 1/4	-2.6	O	LEGICORP	4- 4	3 3/4	- 1/8	-2.2	N	MOHAWK DATA SCI	3- 7	5 1/4	- 1/4	-4.5				
N	PERKIN-ELMER	19- 27	19 1/4	- 3/4	-3.7	A	MANAGEMENT DATA	1- 3	2 1/2	0	0.0	O	OPTICAL SCANNING	1- 3	1 1/2	0	0.0				
N	RAYTHEON CO	45- 54	53	-1 3/8	-2.5	A	NATIONAL CSS INC	13- 25	20	0	0.0	O	PEARL CORP	1- 3	2 1/2	- 1/8	-4.7				
N	SPERRY RAND	40- 67	48 1/4	-1	-2.0	N	ON LINE SYSTEMS INC	18- 22	19 7/8	- 3/8	-1.8	A	PERTEC CORP	3- 9	5 5/8	- 3/8	-6.2				
O	SYDOR INC	27- 31	24 3/4	-3 3/4	-13.1	A	PLANNING RESEARCH	3- 5	3 1/2	+ 1/4	+7.6	A	PETTER INSTRUMENT	2- 2	1 3/4	0	0.0				
A	SYSTEMS ENG. LABS	6- 12	8 1/4	- 1/2	-5.7	O	PROGRAMMING & SYS	1- 1	1 1/2	0	0.0	O	PRECISION INST.	7- 10	6	- 1/2	-7.6				
N	VARIAN ASSOCIATES	13- 17	14 5/8	- 5/8	-4.0	O	RADDATA INC	3- 5	2 3/4	- 3/8	-12.0	O	QUANTON CORP	4- 5	4 3/8	- 3/8	-7.8				
A	WANG LABS.	11- 20	12 5/8	- 7/8	-6.4	O	REYNOLDS & REYNOLD	13- 21	16 1/2	-1 1/2	-8.3	O	RECOGNITION EQUIP	4- 11	9 3/8	- 3/4	-7.4				
LEASING COMPANIES																					
O	COMDISCO INC	3- 10	7 1/2	- 1/4	-3.2	O	SCIENTIFIC COMPUTERS	1- 1	1 3/4	0	0.0	N	SANDERS ASSOCIATES	4- 11	9 7/8	- 3/4	-7.0				
A	COMMERCE GROUP CORP	2- 3	2 3/8	- 1/4	-9.5	O	SMPLICITY COMPUTER	1- 1	1	0	0.0	O	SCAN DATA	2- 4	2 1/4	0	0.0				
A	COMPUTER INVESTS GRP	1- 3	1 7/8	+ 1/8	+7.1	A	TEKTRONIX INC	45- 63	62 1/2	+2 1/2	+4.1	O	STORAGE TECHNOLOGY	9- 13	12 3/8	0	0.0				
A	DATACOR RENTAL	1- 1	3/4	0	0.0	A	TELECOM	2- 5	3 5/8	+ 1/4	+7.4	O	T BAR INC	6- 10	6 3/4	0	0.0				
A	DEL INC	5- 7	5 5/8	0	0.0	N	UNION CORP	2- 2	2	0	0.0	O	TALLY CORP.	4- 6	5	+ 1/8	+2.5				
N	EDP INC	1- 1	1	0	0.0	N	WYLY CORP	3- 7	4	0	0.0	O	TEC INC	3- 5	4 1/4	+ 1/4	+6.2				
O	EDP RESOURCES	1- 1	1	0	0.0	PERIPHERALS & SUBSYSTEMS										N	TEKTRONIX INC	45- 63	62 1/2	+2 1/2	+4.1
A	GREYHOUND COMPUTER	3- 9	7 3/8	- 1/8	-1.6	N	ADDRESSOGRAPH-MULT	8- 13	9 1/4	- 1/4	-2.6	O	UNION CORP	2- 2	2	0	0.0				
N	ITEL	6- 13	11 5/8	- 3/8	-3.1	O	ADVANCE MEMORY SYS	4- 10	7 7/8	- 5/8	-7.3	O	WALACE BUS FORMS	6- 8	7	+ 1/4	+3.7				
N	LEASCO CORP	4- 14	11	- 5/8	-5.3	N	AMFEC CORP	5- 9	7 1/2	- 1/4	-3.2	A	BARRY WRIGHT	4- 10	8 1/8	+ 1/8	+1.5				
O	LEASDAC CORP	7- 11	1 1/4	0	0.0	A	ANDERSON JACOBSON	2- 4	2 7/8	- 1/8	-4.1	O	CYBERNETICS INC	1- 1	1 1/2	0	0.0				
A	NBC INC	1- 1	3/4	0	0.0	O	BEHNE MEDICAL ELEC	3- 4	5 3/4	+ 1/8	+2.2	A	DATA DOCUMENTS	33- 42	35 1/2	- 3/4	-2.0				
A	PITNEY-BOWES CORP	6- 9	8	+ 1/8	+1.5	A	BOLT, BRANKE & NEW	7- 10	8 1/4	0	0.0	N	DUPLEX PRODUCTS INC	17- 24	17 5/8	- 1/4	-1.3				
N	U.S. LEASING	7- 12	9 7/8	- 5/8	-5.9	N	CALCOMP	4- 7	4 1/2	- 1/4	-5.2	O	FANUS BUS. FORMS	6- 8	7	+ 1/4	+3.7				
SUPPLIES & ACCESSORIES																					
O	ADVANCED SYSTEMS INC	1- 4	2 3/4	0	0.0	O	CAMPBELL MEMORIES	2- 6	3 1/4	- 3/8	-10.3	O	GRAMMAGNETICS	9- 13	10	+1	+11.1				
A	BALTIMORE BUS FORMS	4- 5	4 1/4	0	0.0	N	CODEX CORP	22- 42	30 1/2	+2	+5.4	O	GRAPHIC CONTROLS	13- 19	19	+ 1/2	+2.7				
A	BARRY WRIGHT	4- 10	8 1/8	+ 1/8	+1.5	O	COGNITRONICS	1- 1	7/8	0	0.0	N	IBM COMPANY	55- 65	57 3/8	-1 5/8	-2.7				
O	CYBERNETICS INC	1- 1	1 1/2	0	0.0	O	COMPUTER COMMUN.	1- 5	4 1/4	- 1/4	-5.5	O	MCORE CORP LTD	46- 51	45 1/2	-1 3/4	-3.7				
A	DATA DOCUMENTS	33- 42	35 1/2	- 3/4	-2.0	O	COMPUTER CONSOLES	4- 7	7	+1 3/4	+33.3	N	NASHUA CORP	11- 17	16 1/8	- 3/4	-4.4				
N	DUPLEX PRODUCTS INC	17- 24	17 5/8	- 1/4	-1.3	A	COMPUTER EQUIPMENT	1- 3	1 7/8	- 1/8	-6.2	O	STANDARD REGISTER	16- 19	15 3/4	- 3/4	-4.5				
O	FANUS BUS. FORMS	6- 8	7	+ 1/4	+3.7	O	COMPUTER TRANSCREIVER	1- 3	1 1/8	- 1/8	-10.9	N	TAB PRODUCTS CO	5- 8	7 1/2	+ 1/4	+3.4				
O	GRAMMAGNETICS	9- 13	10	+1	+11.1	O	CONFTEN	4- 9	8	0	0.0	N	UNICO	21- 25	22 5/8	0	0.0				
O	GRAPHIC CONTROLS	13- 19	19	+ 1/2	+2.7	N	CCARAC CORP	20- 25	22	-1 3/8	-5.8	O	VANTER GRAPHICS CORP	5- 8	6 1/2	0	0.0				
N	IBM COMPANY	55- 65	57 3/8	-1 5/8	-2.7											A	WARSH MAGNETICS	4- 8	6 5/8	+ 1/4	+3.9
O	MCORE CORP LTD	46- 51	45 1/2	-1 3/4	-3.7											N	WALLACE BUS FORMS	19- 25	21 3/4	- 3/4	-3.3
N	NASHUA CORP	11- 17	16 1/8	- 3/4	-4.4																
O	STANDARD REGISTER	16- 19	15 3/4	- 3/4	-4.5																
N	TAB PRODUCTS CO	5- 8	7 1/2	+ 1/4	+3.4																
N	UNICO	21- 25	22 5/8	0	0.0																
O	VANTER GRAPHICS CORP	5- 8	6 1/2	0	0.0																
A	WARSH MAGNETICS	4- 8	6 5/8	+ 1/4	+3.9																
N	WALLACE BUS FORMS	19- 25	21 3/4	- 3/4	-3.3																

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